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A Recent Look at Netley Abbey.

IN actual appearance the Cistercian Abbey on the banks of Southampton Water is unknown to many, even among architects, to whom its name has been a familiar sound throughout their lives. It is one of those interesting places which get overlooked because they are on the way to nowhere. The west gable can be seen when going down Southampton Water in the steamers which connect Southampton with Cowes, but no passenger boat touches at Netley. It can be reached from Southampton without difficulty by the railway which the traffic to the great military hospital at Netley has called into existence, and the abbey ruins are, in fact, a great resort of tourists and holiday-makers from the adjoining country. But busy people from other parts of England (and architects are usually busy when on a journey) are mostly taking Southampton *en route* for somewhere else, and do not think of spending the greater part of an afternoon in getting out to Netley and back. Perhaps, in spite of the familiarity of the name and repute of the abbey, they are not all aware how interesting and beautiful a relic of early Mediæval architecture it is; with some special points of interest, too, which are missed by guide-books, and even by archæologians.

The single-line railway from Southampton Docks station takes us out, at a jog-trot pace, and with many stoppages, in about five-and-twenty minutes; passing on the way, at a little distance, Mr. Street's memorial church to Bishop Wilberforce, and crossing small reaches of water which are diapered with water-lilies, white stars on a green ground. About half a mile from the station is Netley village, on the way to which we leave on our left hand the huge mass of the military hospital, into the walls of which were incorporated, if we were rightly informed, not a few "precious stones" from the abbey ruins, then uninclosed and accessible to the predatory contractor. Netley, consisting mainly of one side of a street of small houses, looks a place where one cannot imagine anything ever happening at all. A furlong beyond it, and a turn to the right through a gate into long grass, and we are in front of the south entrance into the cloister garth of the Abbey, the outer walls of which are nearly lost in a mass of ivy.

The builders of the abbey adopted the usual taste of the Cistercians in regard to seclusion of site, as far as the nature of the ground allowed them. The land here rises rather rapidly from the water, and then falls again eastward, leaving a ridge, and on the lower ground beyond this ridge the abbey is placed, so as to be only partially visible from the water. The church is known in its main characteristics, to all architects, by the illustrations of it in Sharpe's "Parallels." The brown-tinted lithographs in his fine work, however, convey but an inadequate idea of the beauty of some of the more perfect portions of the building. The stone (said to be Caen) has acquired the most beautiful pearly grey tint from time and minute vegetation, and, seen as we saw it, in one of the few half-hours of bright sunshine which this wintry summer has allowed us, the appearance of the plain, massive, Early Pointed work of the choir, standing in the midst of green foliage, was as beautiful a combination of tone as the painter could wish. The church has the short square choir peculiar to the Cistercian plan, and transepts with aisles on the eastern side. The south transept and the choir are the best preserved; of the north transept only the footings are left, and the same is the case with the nave piers and west crossing piers, of which little but the bases remain. The greater portion of the east and west walls remains, and the end windows, with fragments of the tracery. The choir, as is so often the case, is older than the nave, and unless we are to reconsider some of the usually accepted views as to the relation between date and style, it somewhat contradicts the published statement that the place was founded by Henry III. in 1237. Those who make this statement have, we presume, documentary evidence to back it, but this date brings the foundation to near the close of the full Lancet period, whereas many of the details suggest a decidedly early period of that style. The work is massive and plain to a degree; the orders of the transept arches are merely recessed and chamfered without moulding; the plan of the piers is more like what we usually regard as a transitional plan; the external labels over the lancet couplets form circular arches without the slightest point; and the little bits of foliage carving which terminate the chamfers of the piers in choir and transept (forming part of the capital) have the small leaves and long thin weak stems which characterise everywhere the tentative foliage that preceded the development of the full, rich, and flowing type of the Early English foliage. We should therefore be disposed to think that the date given is at least that of the completion of the choir and transepts, which may have been some time in process through interruptions, or that of the installation of the brotherhood. The foliage which terminates the vaulting shafts at the triforium level is, in fact, considerably later in style than that of the main capitals, as far as one can judge from the small portions remaining uninjured: this may be explained, perhaps, from its having been put up in the rough and carved afterwards. The nave is perceptibly later in style, the aisle windows containing a small proportion of geometric tracery in a tolerably advanced stage of its development, so far as treatment of detail can characterise it. The circular label over the windows is retained, obviously with the object of assimilating the character of the design with that of the choir. The transept has been re-vaulted at a late period of the style, before the introduction of fan vaulting, but verging towards that style of vault; little more is left of it than the starting of the ribs, and the springers which carry them: these latter are very curious and unusual in design, consisting of a long inverted conoid, square on plan, the lower end of which is brought down on to the old vaulting shaft of the original vault; the upper end spreads considerably, and is adorned by the thin wiry mouldings of the period, with a battlement ornament on them, from behind which spring the vaulting shafts, as from a large square abacus. The front of the springer is worked into two long panels, dying into a point at the lower end. The care with which the later masonry is fitted into the old is as remarkable for neatness of workmanship as the design is for clumsiness of effect. It is a very odd freak of Gothic detail, and looks the more so in contrast with the grand severity and entire absence of pretence or affectation in the older work. In these qualities it would be difficult to find work of the period to surpass this. Both the east and west ends, with their plain, massive buttresses, hardly relieved (in the choir portion) even by a moulding, the weatherings just projected sufficiently to give an adequate drip, seem the perfection of the architecture of common sense, good taste, and stability. The fine gradation of line in the successive slopes of the set-offs of the great west-end buttresses is worth attention, the slope becoming steeper and steeper as the buttresses approach the ground, in contradiction to the theory and practice of some modern Gothic architects, Pugin especially, who have laid it down that the slope should be steeper as the buttress rises, in order to accommodate the line of the set-off to the position of the spectator, and enable him to see the face of the upper set-off, instead of seeing only the drip-moulding. But with the Mediæval builders, or at least with those who worked at Netley, the buttress was not a matter of show, but was regarded as a matter of practical building, and the fact of the buttresses following in their slopes the actual line of pressure, which would necessarily be brought nearer to the vertical as the vertical weight of the upper part of the buttress made itself felt on the lower part, is a proof of the practical aim with which such buildings were constructed in the days when Gothic architecture was a real practical thing, and not a mere sentiment.

It was, however, more especially the remains of the conventual buildings concerning which we wished to say a word. Mr. Sharpe, as before observed, has edited the church in his "Parallels," or at least has illustrated it pretty fully, both by views of it as existing and by "restorations" of that harmless and entirely beneficial kind which exist on paper only. But as far as we know, there are no published illustrations of the conventual buildings, and they deserve some comment, as they have some unusual characteristics, and have been in some points incorrectly described even in publications which claim to be the work of experts. The general plan of a Cistercian monastery, followed with so little

variation in the larger establishments of this order, is not here fully carried out, and the reason is obvious from an inspection of the buildings, even without the corroborative testimony of history. According to the latter, it would seem that Netley was really an offshoot from Beaulieu, then the great abbey of the south of Hampshire, but of which there is less remaining now than of Netley. Only a small body of monks were detailed from Beaulieu to inhabit the new monastery at the outset; and Mr. Mackenzie Walcott tells us that at the dissolution under Henry VIII. there were twelve monks in the establishment. The number of inmates at the dissolution epoch may not represent the average numbers during the high tide of asceticism, but this argument applies equally to all the monasteries, and a comparison of the numbers reported at other localities at the dissolution shows plainly that Netley was a small house. It is with the recollection of this that the remains must be examined. According to the usual rule of Cistercian planning, there should be at the centre of the south side of the cloister garth, and projecting from it at right angles southwards, the refectory of the convent. This is the point at which visitors are at present admitted to the precincts; there is a doorway at this point in the cloister wall, but there is not a trace of the refectory building, and as the ground falls away from the cloister enclosure at this point, it seems impossible that there should not have been some vestige of these walls above the ground had they existed, especially since the other portions of the building are so much preserved. But when we come to look over the buildings on the east side of the enclosure, we understand at once why there are no remains of a refectory. The day-room for the monks occupies its usual place, entered from a door near the south-east corner of the cloister,—a long apartment, running north and south, and projecting some distance beyond the south boundary of the cloister garth. But instead of the day-room being lighted at the end as usual, it is intercepted by a square chamber of its own width, communicating with it by a door, but having also a smaller opening about 2 ft. 6 in. from the ground, by the side of the door, and going into this square chamber we find a long room opening out of it again to the left, at right angles to the day-room; a room containing an immense fireplace, and again with a small opening by the side of the door, communicating with the square room, just as in the room. The whole thing is as clear as it can be. The establishment being a small one, it was thought that one long room might serve all purposes, without going to the expense of a separate refectory; accordingly the serving-room is placed at the end of the day-room, and the kitchen at right angles to it. The thing is so plain to any one accustomed to planning that it seems impossible to make a mistake. But when we turn to the description of Netley in Mr. Mackenzie Walcott's "Monasticon," forming the second volume of his "English Minsters," it appears to us that he has explained the building wrongly, from going with a preconceived notion of what ought to be there. He says the Early English door of the refectory is in the middle of the south walk of the cloister. There is a door there, but there is not much if any Early English left in it, and no trace of the refectory walls. What we have called (and what has been generally called) the kitchen, Mr. Walcott calls the "calefactory,"—*i.e.*, the room where brethren who suffered from the cold could find a fire and get warm. There was such a room frequently in Benedictine monasteries; but we have no reason to think that it existed in an original Cistercian monastery (the room is of the same date as the rest of the building), and it seems very unlikely that an order who pushed the duty of "enduring hardness" to such a point that their chapter-house, and frequently the end of their day-room, were open to the air, should have established an adjoining sitting-room, smaller than the day-room, with a fireplace big enough to roast an ox. Mr. Sharpe, who had seen more and written more of Cistercian architecture than any one else in this country, does not seem to have been acquainted with any such building as a part of a Cistercian plan, but he does call special attention to the characteristic large fireplaces in the kitchens, similar in character to this one, though larger in larger establishments. There is certainly a small building outside the south wall of the cloisters and parallel to it, in which are two fireplaces, but these are a late,—probably Tudor,—addition, the fireplaces and part of the walls being built in brick, and the door, which Mr. Walcott calls the refectory door, appeared to us to have been broken through at the same time; certainly we can remember no traces of Early English work in it.* The outer constructions on the south side only show, as at present, indications of a narrow range of buildings running parallel with the south wall, a part of which has been so modernised and interfered with in forming a dwelling for the custodian, that it is difficult to say what it may have been.

The plan of Netley is exceptional in other ways, it must be remembered. Even Mr. Sharpe, who was usually so accurate in these matters, has fallen into too hasty a generalisation in speaking of the "long two-storied building which *invariably* flanks the west side of the cloister," and which he defined, probably rightly, as the "*domus conversorum*." Not only is there no trace of such a building at Netley, but there is no room for it; the west side of the cloister comes too close up to the west end of the church, upon which the building should have abutted.† Again, opening out of the east cloister, immediately south of the sacristy, we find what Mr. Walcott, to our amazement, calls "the vestibule of the chapter-house." It is the chapter-house itself, with its usual three open arches towards the cloister, according to the Cistercian model, and on the east side its range of lancet windows, with holes for the bars supporting the glass or lattice, and no hint of any further passage. Apparently Mr. Walcott (if he has seen the place himself, which his description leaves us room to doubt) calls it a "vestibule" because it is square and does not project beyond the rest of the line of building, whereas, conventual (as distinguished from cathedral) chapter-houses were usually long-shaped, and projecting eastward. But here, again, there is no puzzle, if we bear in mind the indications everywhere that the establishment was a comparatively small one. Even in the Middle Ages people had common sense enough not to build a room bigger than they wanted it. The church was large and grand, because to make it so was an act of worship and devotion; the conventual buildings were suited to the number of the occupants.

The said chapter-house shows beautiful work, a great deal of it in good preservation. The three arches toward the cloister, the centre one open down to the ground, the side ones with sills a little off the ground, were carried on centre shafts of stone, with four auxiliary shafts of (probably) Purbeck marble. These latter are gone, and only their stone caps remain. The sacristy had a door with a bold trefoiled head. The architectural beauty of the cloister-court (except the church side of it) seems to have been concentrated on these chambers. The space for the lavatory remains in the south wall of the cloister. We can see that it had a corbelled out arcade over it, and the bed-stone of the washing-trough is there, but all the detail is broken away. The dormitory was in its usual position over the day-room. There is another story also, the same height, over the kitchen wing; and it is pretty obvious that there was access to the choir of the church on the same level as the dormitory, across the chapter-house and sacristy, in the manner so frequently found; the traces of the triforium door, and the staircase down into the church, are visible in the interior of the south transept. Another point that we may call attention to is that in the west wall of the day-room, near one end, is a large and deep gap in the wall, from which something has been broken away; the existence of this confirms us in the belief that this room was used as the refectory, and that this gap was the recess for the reader's pulpit.

A curious point in the building is that the stream that was turned through it for drainage purposes is still running in its old channel, and the sanitary (or unsanitary) working of the establishment at this point can be pretty well comprehended. Along one-half of the south side of the kitchen, between the buttresses, which form deep embrasures for the side windows, we look down into a deep trench about 3 ft. wide and 8 ft. or 9 ft. deep, and into one end of this comes a continuous stream of water led through a subterranean aqueduct to this point. The buttresses and the wall dividing the kitchen from the square apartment before mentioned, are carried on arches clear of the water-course, which flows out at the south-west angle of this wing of the building, the trench being continued along the side of the square apartment between the day-room and kitchen, except a little space left for a landing at one end. Over the trench, in the outer wall of this square room, is a series of square holes for bearers, about the level of the floor. Here was the monks' "gong," or row of w.c.s, like so many small stalls, with the water running underneath. It is easy to see the part of the wall in front of the trench where the partition came which divided off these *penetralia*; apparently a wooden partition, or, at all events, something that did not bond into the wall, for there is no sign of any stone having been broken away. The "gong" must have been disagreeably near the living-room, but that may have been part of monastic penance. The remainder of the trench, in the kitchen apartment, we imagine was left open to throw kitchen refuse down, there is no sign of its having ever been shut off, and indeed it could not have been so without blocking up the windows on that side, and the end window would have given very insufficient light.

It is a curious question, whether there was or was not a cloister, in the accepted sense of the term. Mr. Sharpe, in his work on "The Architecture of the Cistercians," says, "I know of no monastic remains of this order in England in which the cloister, or any part of it, is left." Mr. Walcott gives it as one of the distinctive features of the Cistercian monasteries, that they had usually no cloister arcade. If this were so, it is the more reason why Mr. Sharpe should not have found one; but though we believe Mr. Walcott to have much knowledge of the documentary evidence as to the ways and habits of Mediæval monastics, we must hesitate to take his word as to points in the architecture of the buildings. Moreover, Mr. Sharpe enumerates several very fine Continental specimens of Cistercian monasteries in which the cloisters remain. There is not a trace of a cloister on the ground at Netley, but there are corbels occasionally, not everywhere, projecting from the wall, as if to carry a wall-plate to receive timbers; at least, we can offer no better explanation of them. Our conclusion would be either that there was a lean-to roof hung from the building where shelter was most wanted, or a timber verandah on wooden supports. Our reason for thinking there was no built cloister is not only the absence of any remains of it, but the fact that there is not the slightest trace on the walls round the enclosure of any groining; and a stone-built cloister would certainly have been groined in a group of buildings where every other covered part, even the merest passage, had a vaulted ceiling.

Netley leaves a delightful impression on the memory when visited under bright sunshine. Some of the trees by which it was formerly too much concealed have been removed, and the ground cleared, but there is enough plantation round it still to give beautiful effects from a purely artistic point of view. Fine trees stand in the cloister-garth, and a large one has grown up right out of the centre of the day-room floor. But the floor of the church is kept carefully as a beautiful level green, its expanse only interrupted by the bases of the nave piers and by an oddly-assorted pile or lump of stones thrown together in the centre of the nave, and in front of which an old rusty field-piece has been stuck in the ground muzzle downwards, for what mysteriously symbolical reason it would be difficult for a stranger to say. From the west door is a very good place to see the church to good effect, and while doing so the spectator will probably notice also that the floor of the church has always been, as now, two or three steps below the level of the ground outside, as shown by the stone steps still remaining. The present owner, Mr. Chamberlayne, has, we believe, every value for the place, and the custodian seems to care for it, and take an intelligent interest in it, but

* It was not till after our visit that we took up, from curiosity, Mr. Walcott's "Monasticon" to see how he described the place, otherwise we might have compared his description with the facts more minutely in some points.

† As another example of the danger of generalities, Sharpe says ("Architecture of the Cistercians") that "the transepts had no aisles, but invariably two or three chapels on their east sides." The aisle-space in Netley transept may have been used for chapels, but to say that the transept has (architecturally) no aisle would be absurd. In the earlier Romanesque or transition churches of the order there were close chapels with partition-walls between them at the east side of the transept; but the aisle form is fully developed at Netley, as well as in some other instances.

there are two things we should like to see altered. For reasons of sentiment we should very much wish to see pic-nics and such entertainments in the grounds put a stop to; as it is, the place is turned into a tea-garden in the most pronounced manner, putting to rout all the associations which belong to such remains. And for purely practical reasons, we very much advise that the ivy should not be allowed its own way with the walls to the extent which it has at present; it is very picturesque, no doubt, but it hides in some places all the architectural detail, and (which is a more serious matter) it will pull down the remaining portions of the walls before their time, if allowed to develop. Some of it should be removed without delay, unless it is wished that much of what is left of Netley Abbey should disappear irrecoverably.

SCHOOL BUILDING AND SCHOOL LIGHTING.

The importance of what we take leave to call the scholastic architecture of England is undeniably very great. We may roughly divide all architectural designs into certain categories, according to the objects for which the buildings are intended. If we do this, we shall at once see that the progress of civilisation is indicated by the predominance, from time to time, of one or another motive for the architect. As far back as monumental relics enable us to pursue the inquiry, defence was the first object of the builder; defence against savage beasts was probably more early in its development than military fortification. The lake dwellings of Switzerland have come down to historic times, but they appear to reach back to a very remote antiquity, and these structures would so readily fall a prey to the attack of any enemy that had sufficient skill to kindle and to propagate fire, that this fact affords a strong ground for the conclusion that the original reason for selecting so strange a site for human abode, was the desire to obtain protection for domesticated animals from beasts of prey.

When we come, however, to the megalithic structures, of which the actual relics are far more ancient in point of historic chronology (whatever may be their true position in the history of civilisation) than the lake dwellings, we can have little hesitation in concluding that military defence was the motive of these costly structures. And from the date of the walls of Tiryns to that of the fortifications now rising on our own shores, military architecture has occupied a very important position,—if not the most important position,—in the art of the builder.

While, however, it is easy, as well as instructive, to define the great classes of military, palatial, religious, or domestic architecture, as well as to point out the special requisites of the buildings required for the working of municipal institutions, or of those devoted to the purpose of amusement; when we have enumerated baths, theatres, hospitals, churches, monasteries, assembly-rooms, parliament-houses, and all other kinds of public building, we must still reserve a category apart for buildings devoted to the purpose of education. We do not obtain those examples, in this respect, from the architecture of Greece that might be at first expected from the consideration of the importance assigned to education by the sages and the legislators of that foremost people in the intellectual race. The reason of this defect, however, is not far to seek. It lies, primarily, in the climate of the Mediterranean. The physical education of the Grecian youth was conducted for the most part in the open air. A layer of sand and a movable fence were enough to constitute the palæstra. Even the higher education of Greece, as we are so well aware, was conducted by men of such heroic stature as were Aristotle and Plato, beneath the peristyle of a temple, or amid the groves of Academe. Thus we look in vain for monumental relics of Grecian schools. The amphitheatres and the temples, each lent their shelter to the pedagogue. So we come down to the time when learning revived, although it revived to breathe another atmosphere from that of the Grecian republics. To the learned monks, especially to the Benedictines, we owe most of the educational impulse of the time when the institution of the monastic orders formed so important a feature in the social physiognomy. Then the school became a portion of a monastery; and, again, the distinction of a special and fruitful motive for scholastic architecture failed to become a matter of necessity.

Out of the monastic architecture, however, has grown, in not a few centres of education, the type of that educational building which we call the college. These edifices, indeed, very closely resemble monasteries in their main arrangements, although they require, for university purposes, special halls, or even special buildings, as in the case of the schools at Oxford. Thus the chapel, the common hall, and the series of cells or apartments for monks or for students, are nearly the same for the requirements of the learned training of our noble youth at the present day, as those that were required for the comfort of the illiterate brotherhood of the darker Christian centuries. Libraries, like the Radcliffe or the Bodleian; galleries, like that of the Fitzwilliam Museum; amply-lighted courts, such as that of the Natural Science Schools at Oxford, have been successively added to the original groups of buildings which (as in the case of the noble foundations of William of Wykeham) were designed on the type of the monastery.

The Reformation, however, has left its handwriting on the educational architecture of the country, in the form of those buildings known as King Edward VI.'s Schools. At Birmingham, at Guildford, and in other places that may be familiar to many of our readers, these venerable buildings breathe a special air of sixteenth century life and effort. They very perfectly represent the idea of the scholastic life of their date. They are humble reflections of the dignity of the college,—buildings not of an expensive character, and yet rich in a sort of learned ease.

The one thing which prevents the still-existing King Edward's Schools from being pointed to as samples of what school architecture ought now to be, is the question of accommodation. The immense growth of the population of the country, since the Tudor times, is such as to demand for villages and smaller towns more school-room than was required for the more important cities when the sixth Edward bethought him that the children whose natural instructors, the regular clergy, had been chased from the land by his father, would grow up like wild beasts, unless some effort was made to supply the teaching of which they had thus been deprived.

Of those great schools which hold a *quasi*-collegiate rank—Eton, Harrow, Westminster, Winchester,—or of that second growth which is now acquiring traditions of its own,—Marlborough, Cheltenham, and the like,—of the picturesque towers of Charterhouse, unrivalled in the beauty of its Surrey landscape; of Woolwich, Sandhurst, the Wellington College, Cooper's Hill, and other places of the kind, we have not now to speak. Our attention has rather been directed, by the speech of Lord G. Hamilton, in moving the Education estimates the other day, towards a more humble, and yet, taken in the aggregate, a more costly class of building. Very few of us, we should conceive, are aware of the enormous amount of school-building that has been going on all over the country since 1872. It may be asked, "Is it not something like shutting the stable-door after the steed is stolen to inquire, at the present moment, into the normal condition of a good scholastic building?" The reply is, that there are two modes of acquiring scientific information; and that in the absence of the first,—exhaustive preliminary study,—it behoves us to make use of the second, namely, the teaching of experience. It is unfortunately true that the teaching of experience in such cases too clearly resembles the old method of communicating the humane letters by the instrumentality of the ferule and of the birch.

From 40 to 42 per cent. of the deaths registered in England occur under five years of age; four-sevenths of that number occurring in the first year. By the fifteenth year of life, rather more than 51 per cent. of the births have been balanced by the hand of death. We may thus infer that about 11 per cent. of the population range in age from 7 to 14 years; so that, if we allow 5 per cent. for children under 7, 15 per cent. on the births would include all the children who could be sent to school under 15. Lord G. Hamilton gives the population of England and Wales at 22,700,000, which of course includes all ages. It would, therefore, appear that the maximum number of children in the country for whom school-room is needed,—if they all went to school,—would be 3,400,000. If it be argued that the proportion of births is not the same thing as the proportion of population, we may look at the question in another way. The total number of births in England, in 1869, was 773,381. If we allow 800,000 births a year, in seven years 5,600,000 children are born, of whom less than half will be alive by the time they reach fifteen years of age. This would, however, give a smaller maximum number for any possible attendance in schools than that which we have attempted to estimate. Exactitude is, perhaps, not to be looked for; but we do not see how it can very well be argued that a larger number of attendances than 3,400,000 could be possible. There is no doubt that no such number has been as yet approached. And it must be remembered that in the allowance we have made are included, not only all those for whom an elementary allowance is provided, more or less at the public cost; but all the children of the richer classes, brought up at home, or in private schools, and also a large number of children who have passed from school to industrial occupations. The tables of the Registrar-General, from which we take the proportions above indicated, go at a step from ten to fifteen years of age. If we drew the line at twelve, we should probably find 12 or 13 per cent. would be nearer the outside number than 10 per cent. On what ground Lord G. Hamilton's information was based he did not state. But the identical number of 3,400,000 children is that which he stated ought, according to the calculations of the Department, to be in daily attendance. It seems to us an outside number. The actual attendances are 2,700,000, which is a definite fact.

School accommodation, however, has already been provided for 3,950,000 children. School building, therefore, is now sixteen per cent. in advance of the highest possible requirements of the country. We cannot require,—or rather, could not require if details and sums always fitted,—to build another school for sixteen years. This is not what the London School Board tell us; and we find each locality must be dealt with according to its own statistics. But still the fact is a very striking one, and it is one that should by no means be overlooked by those who are interested either in education or in building. Lord G. Hamilton admits that the accommodation now provided is "500,000 in excess of what the average accommodation should be, and 1,300,000 in excess of what the average attendance is." We should say that it is 450,000 in excess of what the maximum attendance at the present time possibly could be made if every child went to school.

What, then, have these 3,950,000 school sittings cost? That is one of the points on which we trust that some one will move for a return. We can only offer a rough estimate. It is not, of course, to be assumed that all these schools have been built within the last seven years. Many of them, no doubt, are buildings of some age. Many of them have been supplied by private contributions. During the past year, out of 1,112 new schools, 506 have been supplied by voluntary efforts, and 606 by School Boards. But wherever built, or whoever built them, these schools have been paid for in some way. The buildings of the London School Board, as is pointed out by a correspondent in our own columns (*ante*, p. 435), have cost over 11*l.* per child, and the cost is still increasing, amounting in many schools to as much as 12*l.* or 13*l.* per head. The price of 7*l.* 18*s.* 9*d.* per child is cited by the same writer as that at which twenty-four schools had been built within his own knowledge. If we take an average of 7*l.* per child accommodated throughout the country, we shall probably be under the mark. But even that estimate gives as a result that we have spent 27,650,000*l.* in providing house-room in which to carry on the elementary teaching of children whose education is more or less directly compelled and superintended by the State. It is a large sum of money, and, with a natural wish to see the activity of the work of the builder encouraged to the utmost, we cannot, for the next ten or fifteen years, expect that we can do,—or ought to do,—very much in the way of building schools consistently with ordinary prudence.

However this sum was obtained, it has to be regarded as a national outlay. In our present mode of raising money by funding, every outlay may be regarded as tantamount to an annual charge. Even if we reduce the cost to the improbably low figure of 25,000,000*l.* we still find an annual charge of a million to be incurred, as matter of account, for interest on school build-

ings. Not, of course, that an annual payment to that amount is made; but that the figure represents an annual sum that would have accrued somewhere had the money been otherwise laid out. Thus to the estimate of 2,481,168l., which is that laid before Parliament for public education in England and Wales in the present year, two-fifths has to be added for rent, or something in some way equivalent to rent, of buildings. Or we may say that to the 15s. 9d. per head asked for in the present year, the sum of nearly 7s. per head has been silently added by the efforts already made to provide school-room.

We are not speaking as in any way criticising the expenditure. But it has been, take it how we can, a very large one. We do not find, in point of fact, that large public expenditures of this nature are apt suddenly to collapse. Whatever might be the case if a complete educational budget were regularly brought before the House of Commons by a responsible Minister of Education, and if that kind of detailed criticism to which Mr. Hume used to subject the estimates of his day were again to come in vogue, we may take it for granted that, for some years to come, the school-builder will, at least in some places, be necessarily at work. Supposing this to be the case, what are the chief architectural requisites that should characterise this class of building?

We think that they are of a nature for the determination of which we should look rather forward than backward. We have seen why we cannot look to Classic architecture for models; but it does not follow that we should not look to Classic architecture for motives. What are the chief requisites for a school building? Adequate,—not too much,—warmth, and adequate ventilation are, perhaps, the first; but they are not special to schools. What seems to us to be the first special requisite for a school is light. Light of more abundance and more regulated incidence than is demanded either in the dwelling-house, the church, or perhaps almost any other class of building.

The importance of a good regulation of light in any building devoted to the use of the young is one of those things of which few people are adequately aware. Those who are by nature gifted with a perfect vision are but little conscious how rare that noble gift of nature is; those who are not are probably but little aware, unless special causes have turned their attention to the fact, how much the preservation and the education of the vision depend on the regulation of light. In this, too, it must be remembered that there is mischief in excess as well as in defect of light. The use of over-lighted rooms, where gas is the illuminating power, for night-work is even more to be deprecated than the use of dim, ill-lighted rooms for the purposes of the day-school.

In regarding the illumination of schools, we have to consider not only the quantity of the light admitted, but also its quality and its angle of incidence. What we are anxious to enforce is, that these points should be so thoroughly discussed and thrashed out, that it will become possible to construct a definite formula for the use of the scholastic architect. Thus, first to take the quantity of light. We are able, when we use artificial light, to ascertain the quantity that will fall on any part of a room from a certain number of measured sources of light, because we know that the illuminative power diminishes exactly as the square of the distance from the luminous power increases. But this law does not apply to a window. We know, as matter of fact, that if we take a large room lighted by a given window, or set of windows, we come nearer to the windows if we want more light. In reading in a library, for instance, as evening draws on, who is not accustomed to draw nearer to the window before lighting a lamp or candle? We can understand why this should be. It has nothing to do with the law above cited. It is for the reason that the external atmosphere is full of light moving and radiating in every direction. A ray of light that strikes directly on a window,—as in the case of the sun setting exactly opposite to it,—arrives at the far end of the room with exactly the same degree of intensity, so far as we can appreciate it, as that with which it escapes from the glass. And that will be the same degree of intensity as that with which it strikes the glass, less only any loss occasioned by transmission through the glass itself, which is usually about 10 per cent. But rays of light strike on the flat surface of the window at every angle, from one close to the zenith to upward reflections from the ground. Each ray is deflected from its path by entering, and again by leaving, the transparent screen formed by the window. It is thus evident that a much larger quantity of light will enter the part of the room nearest to the window than will reach the end of the apartment, and that in great degree in proportion both to the size of the window and to the vicinity of the observer. What we want, then, in the first place, is a formula for proportioning the size of window to the size of a room, on the principle that a definite quantity of light, under given conditions of the height of the sun above the horizon, shall reach the part of the room most distant from the window.

It will thus become apparent that the question of quantity of light is very closely connected with that of angle of incidence. For example, in a room lighted by a horizontal sky-light,—if such a thing existed,—there would be no difference in the illumination of the different parts of the room, excepting such as was caused by reflection from the walls. There would be another cause of difference, indeed, even here, but it would be a horary one, dependent only upon the height of the sun above the horizon, modified, of course, by the state of the atmosphere. In the same way the incidence of the direct sunset or sunrise rays would be too brilliant for practical use. They would require filtering through linen, or some material that would absorb a portion of the light.

Again, if we take such a unit of comparison as the quantity of light admitted through a window containing, say, 40 superficial feet of glass, the mode in which these rays would reach the eyes of the pupils would depend, to a great degree, on the form of the window. Thus the window might be regarded as either square or oblong, and the position of either form in the walls would greatly affect the illumination. If we used a window of 15 ft. high, and 2 ft. 8 in. wide, we might admit the same quantity of light that we should do if the window was 10 ft. high and 4 ft. wide. But in the former case the window would reach from the ceiling over to the floor. In the latter, it might reach from the ceiling to within 3 ft. or 4 ft. of the floor. We think few persons can have made a study of the question of the incidence of rays of light on the eye without coming to the conclusion that upward striking light is rather obnoxious than favourable to vision. Thus, if we take the eye of a student seated at a desk or a table as 3 ft. from the ground, all the light that comes into the room below that level, or let us say at a lower level than 4 ft. from the floor of the room, will be in great part wasted, if not actually causing disturbance to the vision. In starting from the level of the ceiling, therefore, the 10 ft. by 4 ft. window would admit more useful light than the 15 ft. by 2·66 ft. window in the proportion of 40 to 28·6. If we try to pursue this subject a little further, we are stopped by a want of observed facts. We know that if a room be required for certain purposes of art, the best mode of admitting light is through vertical windows placed in a lantern at the top of the room, the walls proper being unpierced. But what we want is definite measurement, of a photometric nature, of the effect of the admission of equal quantities of light through windows placed at different altitudes. The subject is one eminently deserving attention. The question will arise as to the method of making the photometric comparisons. We can indicate one. It is to provide a number of discs of glass or slips of ivory on which micrometric scales are formed by ruling lines at minute distances apart. The instrument of comparison would then simply be the eye of a trained observer, making observations as nearly as possible at the same minute of time. Thus in a room lighted in our method he would be able to see clearly, say 60 lines to the inch, in another 80, and so on. This method may be rough, but it has the merit of making the test as closely as possible represent the thing required,—clearness of vision. We will not venture to do more than suggest the great probability of the result being made evident that no window should be allowed to present an illuminating surface lower than perhaps 6 ft. from the floor of the room. The question of the substitution of a lantern for any ordinary windows, in cases where the building could readily be adapted to this method of illumination, would also become a matter of study. One rather anomalous result would be likely here to come out, that is, that in country localities, where, though the view from the windows may be most agreeable, the cost of land may be small, the use of the lantern would probably prove the most convenient. In urban localities, on the other hand, where, as far as view is concerned, wall would be preferable in many cases to window, the high price of site would require the construction of superposed stories, in which a lantern light could only be conveniently applied in that on the highest plane.

METROPOLITAN WATER SUPPLY.

The debate in the House of Commons, on the 13th of August, on the water supply of London, was characterised by moderation and good feeling. The subject is one on which it is especially necessary that the speakers should be fully informed; a preliminary to debate with which it is less easy to dispense when facts of a physical nature are in question, than when theoretic changes only are proposed. Thus the House fully appreciated the advantage of being addressed by the head of the Department of Government which not only has some responsibility on its shoulders in the matter, but which has taken the trouble to master the main facts of the case.

The thesis that impure water prejudicially affects the health of the community; that it affects the moral, as well as the physical, health; that security of life and property depends on an adequate supply of water; and that water ought to be supplied to the population of the metropolis at the lowest cost; is so simple and indisputable, that we should rather have expected to hear it brought forward at a debating society than in a legislative body. It is well, however, to place on record these great postulates. Their truth is not in debate; but their importance may be under-estimated. The assertion of Mr. Fawcett that London is at present suffering more from defects in the mode of supply than from defects in the quality of the water supplied, is, however, rather more of a novelty, especially in the mouth of an advocate of water-reform. Chemical analysis shows that it is the case. The point is one of primary importance, because it shows the direction in which we have to look for improvement. Mr. Fawcett stated that the Thames supplies about 51 per cent. of the water used throughout London. The water of the Southwark and Vauxhall, the Grand Junction, and the West Middlesex companies, the intakes of which are at Hampton, is the only portion of the supply of the metropolis which is now spoken of as unfit for dietetic purposes. It forms above 32 per cent. of the entire supply. As far, then, as any attacks on the purity of the water supplied is concerned, it is important to bear in mind that they apply to rather less than a third of the total supply of the metropolis, and that a practical improvement in this respect is a far less colossal matter than either the friends or the enemies of new schemes are apt to make out. The water of the Chelsea and Lambeth companies, also taken from the Thames, but taken higher up the river, at Molesey, is described as of a superior quality.

We thoroughly sympathise with Mr. Fawcett in that part of his speech which calls attention to defects in the mode of storage of water in houses. Every commission and every committee, as he truly said, that has inquired into the subject has come to the same conclusion as to this. The best water in the world would be hopelessly spoiled if stored in the manner in which water is kept in the cisterns of a great part of the metropolis. Mr. Fawcett spoke of the poorer parts of the town alone. He might with advantage have extended the field of his remarks. Where are the water-cisterns of most houses placed? Are they not frequently in the vicinity of the water-closets, or in some unventilated and confined part of the house? People are apt to forget the absorbent nature of water. If a pail of water is placed in the midst of a room that is being painted, how much of the smell and vapours of the paint does it not absorb? If the supply of drinking-water is accessible to sewer gas,—to heated and breathed air,—or any of the thousand products of the vital chemistry, it acts in the same way. The very virtue of water as a sanitary purifier, its capacity for absorbing and holding in solution or in mixture gases and other foreign matters, is the main source of the impurity of cistern-water. "If pure spring water were run into a cistern close to a cesspool in some damp and dingy back-yard, where soot and almost every kind of filth got into the water, and if no fresh

water were run into it for forty-eight hours,—namely, from Saturday to Monday morning,—as it frequently happens, hopeless contamination would result." There cannot be a doubt of that. But we will go further. We can cite a case in point. It is that of a well-made cistern, fitted with a movable wooden cover, and holding some twenty-five gallons of water. The water is supplied on constant service, regulated by a ball-cock in the cistern, and is of almost absolute purity,—certainly the very best water supplied by any water company in the United Kingdom. Soot and atmospheric impurities are excluded as far as can be the case without hermetic closure. The little cistern is over a water-closet, used only by four, or at times five, persons, and not used by servants. A small pipe allows water to be drawn from the cistern for the supply of the floor on which it is placed.

By dint of thoroughly emptying the cistern, at least once a week, the water in it is kept fit for use,—though it is not used for drinking. The point is, that day by day the cistern becomes less pure. If the thorough washing out be omitted, the water becomes dirty. The only assignable cause is the vapour arising from the use of the closet,—not any permanent escape of gas. A more typical instance of the need of extreme vigilance could not readily be given. How many cisterns in London are thoroughly washed out once a week?

With regard to the quantity of water supply, opinion, as fairly represented on that subject by Mr. Fawcett, is undergoing a change. Some time since the demand was for more water. Now it is for less. The thirty-two gallons per head supplied to the average Londoner (a quantity which rises as high as thirty-seven gallons per head per diem in sultry weather) is contrasted with the sixteen gallons per head of Manchester and other places. The question is intimately connected with that of constant supply,—a mode of service which, with proper care, diminishes the take of water per head. As to this, Mr. Fawcett said that, "excluding the East London Company, considerably less than 10 per cent. of the houses in the metropolis had a constant supply, and that after thirty years' efforts." We do not see why East London has been excluded. The figures which have been furnished to us, from a trustworthy source, give a not altogether unsatisfactory result. They are as follow:—Out of 563,000 houses in the water companies' districts, constant supply is laid on to 128,704,—or nearly one-fourth of the whole; and no less than 76,853 houses have been so supplied since October, 1873.

This question of constant supply may be regarded as one involving the outlay of capital. According to the evidence of one of the most experienced hydraulic engineers in this country, given before the select committee of the House of Commons on the Fire Brigade, the average cost of altering the fittings from an intermittant to a constant supply is 8*l.* per house, taking one with another. Thus to carry out the system for the 434,600 houses still receiving an intermittent supply would demand an outlay in the first instance of 3,476,800*l.* The interest on this ought not to be put at less than 7½ per cent. per annum, considering the nature of the outlay. But even at 5 per cent. it comes to 173,000*l.* per annum. The water rental last year was 1,318,000*l.*, so that a cost of about 8 per cent. would be added as incident on the ratepayers for the fittings;—8 per cent., that is to say of the general rental. We may safely take it as 10 per cent. increase in this particular case. Against this may be set off a saving of, let us say half, the consumption of water. But it is one thing to arrange for a definite supply, and then to take a less quantity, and quite another thing to arrange for a smaller supply in the first instance. Economy is possible in the first case, which is not possible in the second. The only direct saving in the delivery of a smaller quantity of water through pipes and fittings constructed to convey a larger quantity is in the item of pumping. In London the cost of pumping incurred by the water companies in 1876 was a little under 140,000*l.* out of a total working charge of 493,000*l.* The interest and dividends account came to 756,000*l.*, being at the rate of 6·58 per cent. on the capital of 11,600,000*l.* It is enough to state these figures to show how doubtful is the assertion that anything like 100,000*l.* per annum can be saved by consolidation. The utmost that the Government hold out is that the incidence of the 760,000*l.* per annum shall not be increased by these measures. As to the 493,000*l.* now expended on working charges, if the quantity of water consumed were reduced one-half, by the introduction of universal constant service, the saving in pumping would be, as we have shown, under 70,000*l.* per year. That has to be contrasted with the cost of 173,000*l.* per year incurred by the new fittings.

It is of extreme importance that people who undertake to propose improvements in the water supply of London should, in the first instance, acquaint themselves with the facts of the case. That which appears to us to be the most forcible argument for legislative interference in the matter was not mentioned in the debate, so far as we have seen the reports,—that is, the question of remedy for non-payment of water-rates. At present the companies have, and at times use, the power of cutting off the supply to enforce payment. From a purely commercial point of view this is perhaps the simplest and best means imaginable. But from the higher point of view, the public health, it is altogether inadmissible. If it could be shown that stoppage of water was a necessary weapon to leave in the hands of the companies, it would be proved, at the same time, that the companies ought to be bought up, at whatever cost.

To the question of actual cost we may find occasion to return. Mr. Sclater-Booth, who spoke not as an advocate, but as a man possessed of a full knowledge of the subject, wisely deprecated exaggerated statements as to either the quantity or the cost of the present supply. The cost in London, the right honourable gentleman said, is between 8d. and 9d. per 1,000 gallons. In Liverpool and Manchester it is 9d.; and in Glasgow a shilling. Mr. Cross thought that the powers now possessed by the vestries might be exercised with advantage in improving the purity of the cisterns. That very much is requisite in order to supply every house in London with pure water fit to drink is unquestionably true. Our anxiety in the matter is to prevent efforts being made that will do more harm than good. There is no question at all that certain plans which have been proposed on a vast scale would have had the effect of increasing the rates to an enormous extent, without giving any assurance as to improving the quality of supply. We are desirous that effort should be made only in a useful direction; that neither the party of job, nor the party of crotchet, should be allowed to interfere; and that, above all, those who deal with the matter shall have the courage to confess the absolute necessity of a constant house-to-house inspection of cisterns and fittings by independent and competent authority. That is the true panacea; but it is one the advocacy of which is not to be expected from any but real sanitary reformers.

FROM THE BANKS OF THE SEINE.

At this season, when it is the daily custom of editors and public to speak of the capital as empty, ample excuse has been afforded for escaping from the banks of the Seine, in the interesting ceremony which took place on Sunday, the 9th inst., at Le Creuzot, the solemn unveiling of the statue of Eugène Schneider, the work of the sculptor Chapu.

Eugène Schneider may be said to be the creator of the town which bears the name of Le Creuzot (situated about half-way between Lyons and Dijon), and which may fairly be termed the Sheffield of France. Louis XVI., a king so rarely regarded in history as anything but a too famous political character, but who often showed his desire to advance the cause of science, warmly supported the proposal made to work the rich mines of the Creuzot hills, and from the first foundation of the society, the statutes of which he signed in 1784, he took up himself half the shares of the company which was to work the foundry constructed two years previously, and it may not be uninteresting to English readers to learn that some years since a commemorative plate was discovered stating this foundry to have been the first in France, "built to melt the mineral by the aid of coak [*sic*] according to the method brought over from England, and put in practice by M. Williams Wilkinson." While France was suffering from the effects of her revolution, and the still more fatal effects of the first Empire, England, it will be remembered, was commencing that great industrial career which, till within so short a time, she has triumphantly carried through. France, exhausted by her long wars, was unable to supply her own wants, and looked to us for most of the main staples, and great was then the vogue of English razors, English cloth, and English locomotives. Little by little this situation changed, and foremost among the workers stands out M. Eugène Schneider. Notwithstanding the enormous sums which had been swallowed up in the great Creuzot foundry, he boldly, in 1837, purchased the company's rights, and before many years had passed his management produced the extraordinary effects which his son has been able so successfully to continue. After a voyage to our manufactories in 1846, M. Schneider stated it as his opinion that there existed no reason why France should not be as capable as England to supply her own wants, and events have shown M. Schneider to have been right. Almost to a month the patents of the steam-hammer were drawn out by Schneider in France, and our own Nasmyth,—who had paid a visit the same year, 1842, to Le Creuzot,—and before long the factory began to supply many important productions which England till that time had exported. From that day to this Le Creuzot has steadily advanced, but not the least interesting and instructive feature of the now vast system is the simple and paternal organisation which Eugène Schneider inaugurated. He called about him numbers of workmen, and schools were opened for apprentices, who eventually obtained good positions in the factory; savings-banks, a library well supplied with scientific and literary works, an admirable medical service, and a hospital (another hospital was opened on the occasion of the unveiling of the statue on Sunday) were founded, but the chief point to be noticed in the organisation of this admirable system was the principle set forth that all was to be done by the workmen themselves. Charity is a personal quality, foresight is a social virtue; nothing at Le Creuzot is gratuitous, and it is this very principle which renders its organisation stable; the workmen are recompensed each according to his merits. Le Creuzot, indeed, as has been truly observed, realises the ideal of a large industrial family,—large indeed; 15,000 workmen, with a population in the town of some 26,432 according to the last census, and since then there has been an addition of perhaps 3,000 souls. In 1837 the population was 2,500. The ceremony of the 9th inst., we may well understand, was a homage of gratitude on the part of these thousands to the memory of a great benefactor whose noble traditions are worthily continued by his son, M. Henri Schneider. We will not attempt to describe the details of so enormous a factory. We refer those interested to the pages of the admirable work of Turgan, "Les Grandes Usines" (vol. vi.); but above all we would urge a visit being paid to Le Creuzot. Visitors are ever welcome there, and both for the manufacturer and the tourist much is to be learnt in the organisation of the great industrial enterprise.

Very appropriately at such a moment has reached us the announcement of a wise step taken by the Government of the United States in obliging its consuls in Europe to send home on the 1st and 15th of each month a report of the state of trade in the countries and districts to which they are accredited, together with the prices of those articles which might be imported. More than one French journal has taken up the question, urging the Government to follow the wise example of America. However true it may be that our English journals, as the French urge, inform their readers of the state of foreign markets before even the manufacturers of those countries know it themselves, there is none the less as great a need for England, in her present commercial condition, to endeavour to learn the reason of the falling off of her commerce abroad, and this unpleasant truth may unquestionably have much light thrown upon it by our consular agents; then we shall see the reality of what at present is so unwillingly believed, that we are being slowly beaten out by superior intelligence and superior taste,—a fact which we hope our manufacturers may at last believe when they hear it set forth, as it was not many days since at Chester, by so experienced a statesman as Mr. Gladstone.

Paris, in the hurricane which blew over it last Saturday, was deprived of one of the features which strangers and Parisians have enjoyed for the last two years. By a strange fatality, only a few days after the determination of the Chamber for the destruction of the Tuileries, the captive balloon, which has occupied the courtyard of the ruined palace, was

demolished; fortunately no life was sacrificed, and the only sufferer is the intrepid M. Godard.

The death of Mr. Severn on the banks of the Tiber has not passed unnoticed on those of the Seine; his picturesque studio, overlooking the famous fountain of the Trevi, is well remembered by more than one Parisian, and his name in Paris is not merely associated, as it has been so long the custom in England, with that of the poet Keats, but his pictures are regarded here as Thackeray regarded them, as entitled to our reverence.* Severn was no grumbler, or he might have complained that his neighbour, Castellani, received more commissions for his beautiful work in a precious and plastic material, than he, Severn, did for his ideal canvasses. There is no sympathy felt here with the writers of recent letters relating to his funeral at the well-known Protestant Cemetery in Rome, where he reposes as he must have desired, not far from the grave of his friend Keats, beside which he stood and wept fifty-nine years ago; the tombs of Keats, of Shelley, of Gibson, and of Severn, add, indeed, a melancholy interest to the old resting-place of Caius Cestius.

MEDIÆVAL ARCHITECTURE AND "GOTHIC" RESTORERS AT SALISBURY.

It is matter for lamentation, if we may reasonably allow ourselves to be disturbed by anything which it is clearly beyond our power to control, that the necessary discomfort of long railway journeys should miss one alleviation which from time to time seems promised, but only to tantalise and disappoint us. After a long interval of tame scenery, we are at last approaching a cathedral town, and anticipate the pause of five minutes given by a punctual train for a sight of a noble tower or a group of spires, which hitherto has only been known to us pictorially. The object of our interest only comes momentarily into view as we sweep into a station that effectually conceals all but bustle and bookstalls, or up to a station that not of necessity, and, therefore, as it seems to us perversely is so placed as no less effectually to shut off all that we desire to see, but can again only glance at as momentarily when we quit the station as on arrival. In the case of Salisbury, the openness of the country favours us; and on approach and departure, at least, we have the opportunity of gathering delight for comparatively a satisfactory time, and from changing aspects,—the direct and the oblique, of the square tower, and,—may we not boldly say,—of the most graceful spire that architectural genius ever conceived, and most daringly succeeded in erecting. He is not unenviable by one who knows the spire from books, who has had the opportunity of such a vision of the work itself, if no more; still more enviable is one who, arriving at the city after dark, strolls out to the Close, and has his first sight of the aspiring pinnacle lighted only by the moon, or only it may be by some unclouded stars.

It is a common experience that the shades of night lend a massiveness and a dignity to buildings which fall back into the frittered or the common place, if even that is the worst, when seen as they are chiefly, or indeed solely, supposed and designed to be seen, in broad daylight. The lesson is one well worth taking to heart; it is a warning how elaboration of ornament and detail is worse than thrown away when the revelation of its variety and delicacy proves fatal to the decision of leading lines and the subordination of considerable masses. But it is not at Salisbury that the light of day is to be shunned as bringing back confusion which only the broad mantle of comparative darkness can subdue. The plan of the cathedral, diversified as it is, with double transepts, projecting north porch, and lady-chapel, declares itself in all simplicity; every member of the organic group is expressive of that measured self-assertion which never infringes the due importance of the superior, and never loses itself by declining indistinguishably to another that on its own part it is bound to dominate. The architect might be said to have embodied in stone that condition which an ancient stated for a well-ordered commonwealth,—that every member of it should be as competent to exercise appropriate authority as prompt to render due submission. Strange to say, the key to the complete unity is the spire, which it is difficult to date much nearer than a century to the completion of the chapter-house, which itself is somewhat later than the cathedral. The dates of the cathedral are tolerably ascertained as follows:—The foundation laid, A.D. 1218; first service, 1225; full dedication, 1258; the style is consistently then the Early English of the thirteenth century, and that of the chapter-house is somewhat later, and is assigned by probable conjecture still, only to about A.D. 1262.

But the style of the spire, as salient in details of pinnacles and other ornaments, is decided Decorated, and must be placed about A.D. 1350. That the addition of the spire, however, is a more afterthought of a century later is not easy to believe, as it is impossible to prove. Notwithstanding the tendencies of the period of its actual erection, it is in marvellous sympathy with the sobriety of the general structure, so that whatever enhancement of ornament it displays is far from offending as an incongruity, but rather affects us with a sense of that progressive enrichment and advance to emphasis that in nature leads us on from stem to branch and foliage, and culminates at last in "the bright consummate flower." We may safely assume that the earlier architect contemplated a spire; the two spires of Bayeux, in Normandy, attest that the imagination and enterprise of his contemporaries were equal to such original achievements; and beyond this, the presumption is very strong that the design of the first architect was preserved, and gave the leading lines and characteristics which were adhered to by his successor as conscientiously as human nature admitted,—human nature as modified by the instincts of a Mediæval builder who never would complete the work of a past century without giving it more or less the impress of his own. Such impress appears not only in the details of the spire itself, but in the pinnacles of various piers that give attachment to flying buttresses in the re-entering angles of the transept. It is fortunate that these are not more conspicuous, or the detriment to external effect would have been serious; as it is, it is easy to disregard and forget them. The majesty of the spire is largely due to its manifest independence of complicated and officious propping by buttresses. We become aware on examination that the architects thought it necessary to take the fullest security for stability by a system of buttresses which are behind the triforium, and find abutment on the piers of the nave, but the clustered pinnacles at the angles of the tower give expression of adequate solidity at the main points of responsibility; and still something more is gained to the same purpose by the slight but well-defined setting in of the upper stage of the tower which gives to the lower the character of a base. This division of the tower into two nearly equal stages has the further effect of subordinating the whole to the single structurally undivided elevation of the spire; the outlines of the octagon of this rise without interruption from base to apex, the beading of ball-flowers effectually precluding atmospheric illusion at a sharp edge of the sloping line, and the triple bands at varied intervals assist the eye in recognising the height which they mark but do not interrupt.

The exterior of Salisbury Cathedral, then, taken as a whole, is especially, is unusually harmonious; the exposure of the full basement down to the turf-level of the beautiful close is a restoration in a sense that goes far to redeem a word "which was an excellent good word till it was ill sorted"; sequences of importance and magnitude of the lateral projections are happily proportioned; the western front is the least effective feature, but at least it does not interfere, and no further expression is demanded in this direction from the peculiar collocation of approaches. For the same reason it would always be seen in comparative isolation; the general scheme of its adaptation was ingenious and praiseworthy, as made available for the display of architectural sculpture, which the style gave no opportunity for elsewhere. Even the architectural effect would doubtless be very much improved when the sameness of the system of niches with which it is clothed should be relieved by the complex curves of lines and surfaces of draped figures, and enlivened by representation of animated forms. Completion, perhaps, as much as restoration has been and continues to be busied here in filling blanks, and whatever opinions may be held as to the sculpture supplied, it would be unfair not to admit that the general effect must be brought nearer to the original intention, if not to the original design. Where it would seem that this design must have been at fault is in respect of distributed plan; it does not appear how any series of the isolated figures,—groups there could be none,—were so framed in as to indicate a central subject, and thus give a palpable clue to a leading purpose and idea. The west front, however, stands by itself, and is seen by itself, and so long as we remain outside the cathedral we shall be captious, indeed, if we allow quite secondary discords to disturb our enjoyment of a pure and elevated harmony; a certain huddle of buttresses is not nearly so offensive here as in the worse confusion at the re-entering angles of many other cathedrals; the comparatively low pitch of the roof of the nave saves us from the heavy and featureless expanse of lead that so often seems to repudiate fellowship with a decorated and enriched system of curtain, window, and buttresses below, and, another advantage, the flat Norman pilasters which represent rudimentary buttresses are even less inconsistent than the few Decorated pinnacles. The plain and to a large extent admirably exact ashlar of the wall-surface is in keeping with the simplicity of the lancet windows of the aisles and the clearstory and the larger system of the north transept, and leads up to the judicious sparing of considerable plain surface in the spire,—Decorated of the fourteenth century though it may be.

O si sic omnia! but it were well that one who is about to pass within should brace himself, so to speak, æsthetically, and call to mind how many are the occasions when the appreciation of much that is most beautiful is reserved for those who can abstract their attention from the hideous, and withdraw themselves from the obtrusive,—provisionally,—with liberty still reserved to make a visitation upon the obnoxious in due time. Such faculty do we wholesomely exercise when, confronted with archaic art, we are content to ignore crudities, while we do our best to appreciate the living soul of the beauty that struggles to release itself, and gain outcome for worthy expression, in a Selinuntine metope, a vase with black figures, a Madonna of Cimabüe, a sculpture of Niccolo Pisano.

Still more severe than the exercise of eliminating the faulty work of a fine artist is that of cancelling the bad work of a poor copyist in order to recover the fine art of an original which it encumbers; but this is the work that awaits us if we are not to turn away from such a work as the "Niobe" at Florence, and remain blind to how much it preserves of the spirit and inspiration of the lost original by Scopas.

Our difficulties grow as we attempt to grapple with them; how often have we to discount, as the phrase runs, the prejudicial effects of mere decay and ruin; and then we have to supplement from our own imagination those deficiencies in a fine work which are due to the lack of completion by its author,—or to his failure in completion,—as to his spoiling by bad colour what was unimpeachable in form; and, last of all, we have to recognise, if we can, "a sort of goodness in things evil," which are very evil indeed, and undo, if we can, the damage of falsified restoration and of vulgar presumption, in arbitrary change. What, then, is not the problem when we have a compound abuse to deal with, which comprises these mischiefs every one? Little less than this is our task when we now enter the interior of Salisbury Cathedral. Let us show that we are not quite unequal to it, and give to admiration its prerogative and precedence. The interior is now seen freely from end to end without interruption by the light brass gates of the choir or the reredos which does not shut out the view of the window of the lady-chapel eastward. A great charm of this interior lies in the fine proportions of the nave arch under the tower, with its lofty Purbeck shafts, its correspondence with the vault of the nave, and then with the arch that encloses the heads of the high-lancet triplet-window at the west. This latter advantage is again made the most of in the transepts. Here no such odious misfit is shown as we are too often afflicted by; the main outline of the lighted portion of the wall agrees above with the enclosing curve of the arch, and what blank space is left around is well and justly distributed,—not cramped in one part to be left shapeless

* Prince Albert, who appreciated Mr. Severn, commissioned him to paint one of the lunettes of the famous pavilion at Buckingham Palace, to which Thackeray refers in his "Lyra Hibernica":—

"That picture of Severn's is worthy of rever'nce,
But some I won't mintion is rather so-so,
For sweet philosophy or crumpets and coffee,
Oh, where's a pavilion like sweet Pimlico?"

and in excess at another; for once we escape the association of an interior with an exterior curve which it neither knows how to agree with nor reasonably to differ from.

A main beauty of the cathedral has been forfeited, necessarily or not, by the introduction of late sub-arches and inverted buttresses across the transepts, with a view to give rigidity to the structure. We thus lose the fine effect of the main tall arches north and south, and the fair and open vistas over the crossing to the north and south windows.

Another serious consequence of this is that the expression of verticality which can be ill-spared in this interior, loses the help of the tall shafts at the crossing, which are entirely covered up,—covered up where it is most important that verticality should be insisted on. The horizontal string-course below the triforium now passes continuously from one end of the cathedral to the other. Thus is exaggerated one of the few difficulties,—but that a serious one,—which are chargeable to the original design. This string-course is not crossed by vaulting shafts, and in consequence the division of the nave into compartments by the vaulting is at odds with the horizontal division into stories; horizontality makes a hard fight for predominance again by the unfortunate design of the triforium. At Lincoln and Westminster among other examples, over each side arch of the nave a pair of triforium arches are carried up to the clearstory string-course, and thus a tall proportion of parts is obtained; but at Salisbury the pair of arches are kept low and spanned by an arch-moulding so low, and at so open an angle, that it seems to awkwardly straddle across to the dumpy compound pier; leaning over on this instead of appearing to easily spring from it, it is an ungraceful arch in itself and here peculiarly out of place in its proportions.

Then we may fairly take exception to some other particulars, and are supported by the practice of masters of equally good time. The ribs of the quadripartite vaulting descend upon an attached pillaret or corbelled shaft; the same adjustment is no doubt found elsewhere in nobly elaborated examples, and yet it were surely ill that "the influence of authority" should be allowed to justify imitations. The responsibility of pressure which the ribs express is delivered unfairly; it seems cast not on the wall, but in front of it,—in front, indeed, of the very stout compound triforium pier below and behind it, which thus becomes a counter-sense.

Once more. The transverse moulded rib has a special significance, if only as self-dependent and marking the compartment; but it does not receive the acknowledgment of a rosette like the oblique ribs at their meeting. The fact of meeting to cross is doubtless the suggestion of such an ornament as a rosette or knotted boss; but the single rib looks weak and poor by contrast. The architect of Westminster solves the problem by introducing a ridge-band, which gives the justifying crossing,—the desiderated strength and the ornament.

If we are to pursue our indictment of the ancients conscientiously, and we must do so if we are to claim liberty to reflect upon the moderns, the orders of mouldings of the nave arches are scarcely distinguished with that best command of section which is the glory of Early English Gothic at the very best. In the choir and partially elsewhere a remedy almost sufficient is given by separating lines of a very acute dogtooth, but elsewhere the projections and groovings are not so managed as to define the correspondence of systems of mouldings and the shafts they pertain to. It seems probable that progressive improvement may be traced even within the building itself.

There are considerable indications that anciently, whether originally or not, reliance was placed on colour to give the contrast and definition which simple light and shade did not sufficiently bring out. Here we are landed in a great difficulty for the conduct of anything like a distinct charge against the ancients. We cannot condemn them without knowing certainly what it was they did, and in our ignorance of this it is impossible for us to say that they may not have been competent so to manage colour as to surmount this particular difficulty and some others that are sufficiently obvious.

The Purbeck shafting, which is so liberally employed, is beautiful in itself, but its decided colour makes an abrupt contrast with the white stone of the plain surfaces and mouldings, and high polish only promotes the discord and reduces whiteness to chalkiness. It does not appear impossible that patterns might in some way be applied on the surfaces above the nave piers, so as not only to alleviate the discord of colour, but also by direction of lines to unite in some degree the piers with the triforium, to form a transition between the two stories. This is not impossible, but there is no encouragement to think that it is a likely consummation.

Whatever may have been the management of colour by the Mediævals, in the hands of the moderns at Salisbury, it is,—must plain truth be spoken plainly,—little less than revolting. When the result is unqualified ugliness we demur to the plea that the Mediævals set the example. If what has been done is the outcome of a course of sedulous and matured study we must sanction the application of a rule that an old prologue makes absolute for an over-laboured comedy,—

> "Damn it the more,—have no consideration
> For dulness on mature deliberation."

The colourings of the mouldings, original or refreshed, are at once flat and gaudy, dead and fantastic, disturbing, annoying, exasperating, and intenser adjectives would follow if we let them. When Lord Campbell saw the colouring of the vaulted ceiling of the restored Temple Church, he said it reminded him of Grimaldi's breeches. The generation which "knew inimitable Joe" is becoming rapidly extinct, and pantomime also is said to be dying; but if absurd contrasts of colour are required for its revival the colourists whose effects we criticise are of competence approved. It is really difficult to be serious on the subject, for seriousness must soon merge in undesirable severity. What must be the state of the case when we can see with pleasure the new colour detaching itself from the clean walls of the chapter-house,—by the square foot, by the square yard.

The difficulty as to colour comes up still more seriously in the matter of glazing. The extent of window opening throughout the cathedral can only be justified on the assumption that it was intended that the glare of admitted light should be tempered by the character of the glazing. This glare is at present intolerable; it could only be corrected by coloured or dulled glass. Remains of the ancient glass go far to prove that this might be done successfully; it may be uncertain whether it ever was done completely; it may have been left, like the spire, for the renewed resources of another generation to finish. The windows were not intended for looking out of; they were to light and to close in the holy structure, not to admit views, though only of trees and skies. In some of the preserved glass, the general tone is that of grisaille; it was given by a cool sea-green tint in the glass itself, which thus admitted none of the sharp sparkling white light of modern pure glass, and the roughness of the surface was further contributory to dulling the rays. Upon this was painted in an opaque dun colour a pattern of fine thirteenth-century foliation. When this is examined close at hand it is impossible not to admire the fine, clean outline, the purity of curve, and the delicacy with which a bold broad stroke tapers off to the fineness of a hair. The ultimate finish is given by narrow right-lined fillets and occasional centres of translucent coloured glass, which enliven, but do not predominate. Not only was such glazing not intended to be looked through, but it was not intended to be looked at otherwise than casually and incidentally; it was enough if it conduced to a general sentiment of tranquillity appropriate to the engrossing influence of devotion.

It may naturally and appropriately have been otherwise for the larger and terminal systems of lights, east and west, north and south. Here, if anywhere, there was fitness as there was scope for truly storied windows. Little of what was ancient in this kind now remains; what there is of modern only pronounces itself too positively. Windows, be it in all sadness said, are so introduced and so coloured, as if the characteristics and very purposes of the fabric were entirely forgotten. Windows are inserted in places where they declare themselves to be only parts of a series, yet so tawdry in effect,—even gaudy seems too complimentary a word,—that the dedicators themselves must be the last to expect that the companions can be filled in the same style. Happy that so it is! But then how vexatious is the single ostentatious intrusion.

The delicate shafting of the lady-chapel seems to demand association with tints as modest and refined as those of an Annunciation by Fra Angelico. But windows are inserted of such colours as are at once too rich and too dark, too gloomy and too garish, that flaunt with the insufferable intrusiveness of a music-hall advertisement. The offence is diffusive towards chancel and choir, whence the windows are visible by whoso is ill-advised enough to look.

But now enough; such is the burden of which we have to deliver our souls as we quit Salisbury Cathedral after visiting it and revisiting. When the burden is delivered it may be happily dismissed, and happily we may congratulate ourselves that whatever has been our dismay at witnessing what (reverential) restoration ill-advised is capable of, the beauty and simple dignity and majesty of the thirteenth-century architecture of Salisbury are mighty enough still to dominate even abuses so extensive, and to live on in our memory after the misdeeds of false friends are forgiven,—forgiven because, in consequence of their comparative insignificance after all, they are in time forgotten.

W. W. L.

LONDON RECORDS, KNOWN AS "THE REMEMBRANCIA."

In the Record Room of the Town Clerk of London a series of books, nine in number, is preserved, entitled the "Remembrancia." These books contain copies of correspondence between important bodies and individuals of distinction on matters relating to the government of the City, its usages, customs, and public buildings, and embrace the period between the years 1579 and 1664. Upon the recommendation of the Library Committee the Corporation have just now published an analytical Index to this series, prepared by Mr. W. H. Overall, the librarian, and Mr. H. C. Overall, assistance having been given in the compilation of the biographical notes, which are numerous and valuable, by Mr. Reginald Hanson, F.S.A., chairman of the committee.*

Mr. Overall's knowledge, ability, and carefulness are so well known, that *il va sans dire*, as the French say, that the work is thoroughly well done. The references are given under separate headings placed alphabetically, as "Admiralty," "Aldermen," "Ambassadors," and so on, so as to be readily accessible.

Let us see what may be gleaned from two or three divisions, which address themselves more particularly to our readers. Under the head "*Buildings*," for example, reference is given to a letter from Jeamys Crofte and Sir Francis Walsingham to the Lord Mayor and Aldermen, reciting the Queen's Proclamation, dated at Nonsuch, the 8th of July, in the twenty-second year of her reign, commanding all persons to forbear from any new buildings within three miles from any of the gates of the City of London, and stating they were informed that Richard Woodrof had obtained a lease from William Chambers, gent., of a piece of ground with buildings thereupon, in Gunpowder-alley, *alias* Crown-court, within the City. This is dated 12th June, 1582. Then comes another letter from the Lords of the Council to the Lord Mayor and Aldermen, directing their attention to the Queen's Proclamation, prohibiting new buildings in and about the City, which gave power to the Lord Mayor and Aldermen to prevent the same, but which had been so ineffectually carried out, that buildings had greatly increased within the City and liberties, to the danger of pestilence and riot; and directing that steps should be at once taken to find out the number of houses erected, and by whom, and to certify the same to the Council, in order that the persons might be called before the Star Chamber, and to take into custody the workmen refusing to obey the said Proclamation, and commit them to close prison, certifying their names to the Council. (8th April, 1583.)

The Star Chamber dates back to very early times. In the reign of Edward III., 1240, it occupied the Chambre des Estoilles, near to the Exchequer at Westminster, from which it took its name. The history and constitution of the Court are given at considerable length in letters from John Bruce, esq., F.S.A., to the Society of Antiquaries, published in the "Archæologia," vol. xxv., p. 342 *et seq.* During the reign of Henry VII., says Mr. Bruce, "the Court became the instrument by which the politic rapacity of the sovereign and the subtility of his favourites, 'promoters of suits,' accomplished their nefarious purposes." The rulers of the City of

* Analytical Index to the Series of Records known as the Remembrancia, preserved among the Archives of the City of London. London: E. J. Francis & Co., Took's-court. 1878.

London did not escape: Sir W. Capell, Alderman of London, was fined, in 1495, a sum of 2,473*l.*, but compounded for 1,615*l.* 6*s.* 8*d.*; in 1505, he and his son, Giles Capell, were fined 1,000*l.*; they paid 100*l.* down, and gave recognisance for 900*l.* In 1507 Sir William was again fined, but refused to pay; he was thereupon sent to the Tower, but was released upon the death of Henry VII.

Dated October, 1593, there is a letter from the Lords of the Council to the Lord Mayor, directing steps to be taken to prevent the erecting and overcrowding of small tenements within the City, and that the aldermen and their deputies in the various wards should make search, and in cases of overcrowding, remove the inmates, according to the statute lately passed for that purpose. This statute was 35 Elizabeth, c. 6, 1593. It declares that "great mischiefs daily grow and increase by reason of pestering the houses with divers families, harbouring of inmates, and converting great houses into several tenements, and the erecting of new buildings in London and Westminster."

There is further a letter from the Lord Mayor to the Lord High Treasurer (the Earl Dorset) acknowledging the receipt of a letter from him concerning a building erected by Humphrey Hall, prejudicial to the Common Hall of the Innholders, and informing him that he had ordered the four sworn viewers to inspect the same, who reported that it was built according to the custom of the City, &c. This is without date. Sworn viewers were appointed by the Court of Aldermen from a very early period. The practice, although in some instances departed from, was to appoint to these offices two Master Carpenters and two Master Masons. Mr. Jupp, in his "History of the Carpenters' Company," gives much interesting information, with extracts from the Civic Records, concerning these officers. The Fire Act of 1666-7, 18 & 19 Charles II., cap. 8, sec. 2, continued them, with greatly increased powers, under the title of surveyors. John Ogilby and William Morgan, two of these surveyors or sworn viewers, subsequently surveyed the whole City, and published a most accurate ground-plan in 1677, a copy of which is preserved in the Guildhall Library.

The endeavours to prevent overcrowding, indeed to prevent any addition to the number of inhabitants, appear to have been continuous. Dated Oct., 1632, there is a petition to the Lords of the Council, complaining of the multitude of newly-erected tenements in Westminster, the Strand, Covent-garden, Holborn, St. Giles's, Wapping, Ratcliff, Limehouse, Southwark, and other places, which had brought great numbers of people from other parts, especially of the poorer sort, and was a great cause of beggars and other loose persons swarming about the City, who were harboured in those out-places. That by these multitudes of new erections the prices of victuals were greatly enhanced, and the greater part of their soil was conveyed by the sewers in and about the City, and so fell into the Thames, to the great annoyance of the inhabitants and of the river. That if any pestilence or mortality should happen, the City was so compassed in and straitened with these new buildings, that it might prove very dangerous to the inhabitants. They, therefore, prayed the Council to consider the great inconveniences of these new erections, and to be a means to the king that some restraint might be had.

Under the head "*Costume*" there is a letter, dated the 5th of May, 1580, from the Lord Mayor to the Lord Treasurer, stating that in executing the commands of her Majesty, for the reforming of monstrous Ruffs, and other disorders, he had friendly admonished Mr. Hewson, son-in-law of the Lord Chief Baron, for wearing excess of Ruffs, in the open street, after Easter, against her Majesty's proclamation; that he replied in a very contemptuous speech, and for the credit of his office, he had been compelled to take further steps to enforce the royal commands, whereby he had given great offence to the Lord Chief Baron, which he had expressed in his letter enclosed, and by refusing to enter his house, and that, fearing his displeasure for the rest of his life, he prayed his lordship's intercession in the matter. Philip Stubbes, in his "Anatomie of Abuses," published in 1583, gives a very curious picture of the excesses of dress in England, denouncing the great *ruffs, costly skirts, hosen, jerkins*, &c. Hall, in his "Satires," says of a fashionable, that he is as "double as his double ruff." A proclamation was issued by Queen Elizabeth, on the 12th of February, 1579, which is probably the one referred to in the letter, to prevent excesses in dress. It refers to the several laws passed for restraining the same in the reign of King Henry VIII., and gives a schedule of the permitted and prohibited articles of dress.

The first letter under the head "*St. Paul's, Cathedral of,*" is one dated the 3rd of December, 1580, from the Lord Mayor to the Lords of the Council, reporting the steps taken by the committee appointed to consider what should be done in the matter of re-edifying the steeple of St. Paul's Cathedral, and requesting the advice of her Majesty and the Council as to the form of the building, the manner of proceeding, and the amount necessary to be collected for carrying out the work. On the 4th of June, 1561, a terrific storm burst over London. The church of St. Martin, Ludgate-hill, was struck by lightning, and so also was the steeple of the cathedral, which, being of wood, covered with lead, caught fire and was burned down, the *débris* causing great damage to the church. The steeple was never rebuilt, but steps were taken to repair the roofs. The Queen gave a thousand marks, also a thousand loads of timber, and in addition about 7,000*l.* was raised among the clergy, citizens, &c. Six citizens and two petty canons were the committee appointed to oversee the works. It is evident that the restoration was but imperfectly done, for in 1620, King James I. had his attention called to the ruinous condition of the edifice, and on Sunday, the 26th of March, 1620, he rode on horseback, attended by the nobility, and was met by the Lord Mayor and civic authorities, to hear a sermon at St. Paul's Cross, and afterwards to consult as to how the repairs could be effected. The result was that a Royal Commission was appointed to consider what measures should be taken towards restoring the church, removing the houses built too close to it, and in what way the necessary funds should be raised. The Lord Mayor of London was the first person named in the Commission. Inigo Jones was the architect. The raising of the fund would appear to have been a difficult task, nothing was done for eight years. Charles I. issued another Commission, dated April 10th, 1631, and the Chamberlain was appointed treasurer. Among the contributors, Sir Paul Pindar, the wealthy merchant of Bishopsgate, is mentioned; the total sum contributed by him amounted to about 10,000*l.* Charles II. issued a Commission for the repairs of the church, soon after his restoration, April 18th, 1663, and gave 1,000*l.* towards the funds. Sir Christopher Wren was appointed architect, and one of the Commissioners. Wren presented his report for repairing the cathedral, May 1st, 1666, which was agreed to on Monday, August 27th, 1666, but on Sunday, September 2nd, the Great Fire broke out, which destroyed the cathedral, and put an end to all plans for its restoration. See Stow's "Survey of London"; Dean Milman's "Annals of St. Paul's"; Longman's "History of St. Paul's."

The Corporation are entitled to thanks for making known the contents of "The Remembrancia."

THE ARCHITECTURAL ASSOCIATION AT WELLS.

By an odd slip on the printer's part last week, in the notice on page 921, the "dreamy" hours in the quiet days became "dreary," to the surprise of everybody. Vocabularies might have been searched in vain for a more inappropriate adjective to apply to the hours and days which have glided along with unhurrying and unlingering pace, and filled with sunny memories the week of excursion in the north of the centre of Somerset. The Association has always, since Mr. Sharpe showed the way, leaned towards a hard-working week, with plenty of critical notice of changes in architectural style,—with little divergence into general archæology, but with plenty of use of sketching-stools, two-foot rules, and ladders. The amount of record, shown as of old on the last night of the week, seemed somewhat startling, and might well have taken away a little of the breath of an innocent bystander. Some of the tendencies of the years we are living through are perhaps never shown by any other index so surely as by the preferences of a set of young architects left to act for themselves. It has now become necessary, in constructing programmes, not only to look out for *pièces de résistance* in the shape of fine and notable churches; there must also be a fair show of civic and domestic buildings, not to be kept in the background, and come upon by stealth, but to be sought out eagerly, and preferred, it may be, when a choice must be made, to ecclesiastical work. Observers are not slow to remark that a good deal of the necessary restoration has been done, and, besides that, restoration is being taken up in a somewhat different spirit from that erewhile prevalent. A good deal of philosophical analysis and construction might be spent anent the reasons why old inns, manor-houses, cottages, seventeenth-century hospitals, &c., are pounced upon with absolute rapacity; and why tombs, chests, tables,—not to speak of more pretentious woodwork of the seventeenth century,—are noted with liking; woodwork which, in the days of purism, we all so well remember, would have been sniffed at in the most suggestive way. Mr. C. R. Pink, the excellent excursion honorary secretary, with infinite pains, constructed a programme to suit the times. As, however, a catalogue of buildings,—their parts, their dates, and their fittings,—is very hard writing, and still harder reading, it may conduce to the comfort of the gentle reader if only a few of the peculiarities of the buildings studied are noted; and if, for the sake of brevity, comparisons are kept within the programme. The temptation is always strong to describe something known to several by reference to something presumed to be known to all,—a custom sanctioned by use till at last honouring in the breach becomes a counter-custom, and affords another illustration of the revenges brought in by the whirligig of time. Mr. James Fowler, F.R.I.B.A., of Louth, took the direction of the party, kept all in active movement, and at every building brought his large stores of experience to bear, and in a discourse of a few minutes' length, put the history and the noteworthy features plainly before the members.

It would be unfair to say that the builders of the centuries before the fourteenth are practically unrepresented in the "district,"—a phrase which is sometimes hazarded, and might be considered absolute slander, if it was intended very seriously. In mere quantity of work now remaining to us, the fourteenth and later centuries come off better than all those before, and the work of the first half of the twelfth century is certainly almost unrepresented. But in the list of one cathedral, one abbey church, and a little over twenty parish churches, visited, a sequence of good work could be made from the latter half of the twelfth century up to the present time without any considerable gaps. The Transition, for instance, needs no better illustrations than the west part of Glastonbury, and the nave of Pilton on a less stately scale. For the Early English period there is the great narthex, and a good deal of the Abbey Church of Glastonbury, and the remarkable work at Wells. The existence, in these great churches and their appurtenances, of excellent work of almost every date would, however, naturally lead to their playing too large a part in anything resembling a complete list. The point may for that reason be passed by without detailed proof, as far as concerns the latter half of the thirteenth and the greater part of the fourteenth century.

The adaptation to site, which gives such constant charm, is peculiarly a property of these more or less hilly districts. Crosscombe, for instance, stands on a hillside, and a flight of broad steps is needed to lead from road to churchyard,—a pretty picture, flanked, as the road is, by stone-mullioned cottages, and the background formed of similar little buildings on the upper slopes of the hill. Axbridge, too,—a tiny town nestled under Sheepshelve Hill, towards the western end of the Mendips,—has an open *place*, in the north-east corner of which ascent is made in flights of steps, and the centre tower of the handsome cruciform church shows with excellent effect above the houses which abut upon and, indeed, enter from the stone landings of the rising flights. Shepton-Mallet church, seen above the low buildings and the fixed tile-roofed stalls of the market-place to the west, is a natural composition of that simple kind,—dear to the heart of a painter,—which owes much of its easy picturesqueness to accident of site. The hillside on which Pilton Church is placed has led to another instance of sets of steps. Mells, three or four miles west of Frome, too little known even to the Somerset admirers of home scenes, dwells in the memory as one of the most perfect of villages in this district of hill and dale, bright and strong little streams, and fair show of well-grown trees. One of the tiny feeders of the

Frome flows out from the leafy solitudes of Mells Park, which is on the west of the village, eastwards towards Elm and Vallis. When approached from the southward hill by way of Nunney and Whatley, this stream marks out the low level of the valley, from which well-marked slopes rise, dotted with grey stone cottages, many of them ancient; and the church, which has a western tower of much dignity, is framed in the centre of the picture by the dark green foliage of the trees on the east of the road, which forms a pleasing limiting line. "Little Jack Horner," our firm friend from earliest years, had his home at Mells; and his "corner" may be seen and sat in, when the hospitable host wills that the gabled, bay-windowed, and Tudor-chimneyed manor-house shall receive guests. Let us hope that he will not compound for good deeds done with so much grace and goodwill, by destroying, or removing, or altering much the benches in his church. Woodwork of the first half of the seventeenth century, with this kind of merit, is much too rare, and in its original position gives the flavour of genuine antiquity in a way which no modern woodwork, albeit of the best Mediæval type, can hope to rival, for "tyme tryeth truth." The somewhat similar bench-ends at Bruton run no danger now, for several generations to come no architect will think their existence menaced, yet they are far inferior in design and execution to those at Mells, which, on account of minor injuries, and supposed incongruity of style, now live a threatened life.

Although cruciform parish churches, with towers over the crossings, are to be met with;—Ditcheat, Axbridge, and Doulting, — an octagonal tower, — being sufficiently characteristic examples; yet western towers have naturally the preference among these later churches, — frequently opening into the churches with grand arches, and in many instances vaulted with ably-treated fan-vaulting, butting against bold ribs round central rings. These towers are so well known; their size and special character seem, indeed, to have seized the imagination of the dwellers in other districts so strongly, that "the late towers of Somerset" serve not unfrequently as a modest summary of the buildings to which they belong. Shepton-Mallet, Bruton, West Cranmore, and Cheddar may be grouped together as specimens of the same idea, worked out with differences of expression, due to varying dimension and differenced details. Four principal stages,—three only at West Cranmore,—the upper with a triple division, a west door, and a large west window in the lower stage, buttresses at the angles, terminated at the bottom of the upper stage with disengaged pinnacles, and angle pinnacles carried upon their upper slopes, would sufficiently describe their general features. North-east turrets, carried as high as the parapets, or above them, occur in these as well as in the churches of a simpler form, more common elsewhere, of which Rodney Stoke is a fair example. The tower at Axbridge, with differences due to its standing on the crossing, would group with Shepton-Mallet. The staging of the buttresses, *e.g.*, at Bruton, is well done, so as to diminish the bulk of the tower in the simplest way up to the termination of the solid walling, at the string below the rich topmost stage. The face of the wall itself sets in somewhat at that level, and the lower pinnacles,—behind which the light is seen,—force the lightening of this stage upon the mind, with the happiest results. The whole outline of the tower takes shape, and there is that look of easy mastery of the whole problem which makes and marks all considerable successes. For some reason, now lost in the mists of time, it has become a custom to class such towers as Shepton, West Cranmore, &c., as of "the Taunton type," the natural interpretation being that St. Mary's Church has furnished all the distinctive features of the design. This popular superstition has, of course, its basis of fact, as common beliefs are wont to have. The basis of the inverted pyramid is, however, the narrowest part of the structure. The Taunton tower is of late date (about 1500), and the others belong to different dates. The difference in character of the detail need not, however, be made much of. The only other thing in common is the treatment of the buttresses, which, as noted above, give seating near the springings of the upper windows to disengaged pinnacles, and allow the angles of the upper stage to appear set back in effect from the broader stages below. Western doors and western windows are too common in every part of the country to found resemblances upon. The long-separated brothers of farce do not arrive at mutual recognition by noticing features universally prevalent. St. Mary's, Taunton, has two windows on each face for each of three upper stages; Shepton has three divisions on the upper stage, and no similar stages below. At St. Mary's the great parapets of open-work resemble the others merely in outline,—not always in that; their height and the piercing are special to themselves. The immense open angle turrets and pierced spires above them at Taunton bear no resemblance to the single solid pinnacles at Cheddar or Axbridge. It would certainly be an interesting study for some persevering archæologist to determine where the very beautiful and original arrangement of these towers was first carried out, and to deduce a history of change and improvement to the towers of the fifteenth and sixteenth centuries; but a contented acceptance of Taunton as such a first example is probably about as much wrong in point of date as it is in perception of the essential features of the design.

Evercreech, perhaps the most perfect of the whole of the towers,—a very exquisite object as seen under the lighting of a westering sun,—differs a good deal in form from Shepton and its congeners. Very broad masses of buttress lead up to grouped masses of finial and pinnacle, arranged with admirable art. Embattled parapets, broken in upon by smaller centre pinnacles, crown the sides. The tower is occupied for near upon half its height by windows, two on each face, divided into three heights, the lower divisions solid, the upper divisions filled in with stonework pieced in patterns. A broad division with only small openings comes next, giving, by its plainness, great value to the rest; and the lower stage has on the west the common arrangement of doorway and great window. St. Cuthbert's, at Wells, is an example of a more solid treatment, not unlike in arrangement, but severe dignity has been aimed at, and it would therefore miss its intention sadly if any one was led to look for the grace which has been infused into the *tout ensemble* and into every detail at Evercreech. At St. Cuthbert's the expression of force is well sustained. The buttresses, one on each face at each angle, have strong projection, and are carried up with plain faces and only three set-offs, from the ground till the springings of the enormous windows are reached. The deep recesses of these windows and their rigid treatment are in good keeping. Perhaps it might be hinted by a stranger, who did not know that he risked his personal safety by mentioning to the good people of Wells anything to the prejudice of their well-reverenced tower, that the parapets might be the better for some additional height and a little more boldness, and that the solid building up of the windows with plain squared ashlar can hardly have been the first intention of the designers. This ashlar is now being renewed, and it may represent the filling-in which was there from the first. It is not necessary, however, to believe that the designer fell in any way behind the directors of the works at Bruton, Evercreech, and at the little church of Pylle, where the tower-lights are filled with very nicely designed pierced slabs. The infrequency of spires on towers (except those of modern churches which seem rather to affect them) might serve as a text for a longish discourse. The Perpendicular spire of Crosscombe, a pleasingly-managed spire, with rolls at the angles, and panelling at about mid-height, but without spirelights, shows that there was no universal vow against them. Doulting, a not very happy example of a rather short octagon upon an octagon tower over the crossing, was, oddly enough, visited in succession to Crosscombe, with its well-developed spire, and Shepton with what looks like an incipient spire, which, like St. Mary Redclyffe in old days, had not attained to, or been shorn of, full dimension. The county of Somerset probably does not furnish forth any other three adjacent villages with the same feature in their churches. The fact that there are two towers at Bruton seems never to escape remark; but the small tower over the north porch seems a kind of pretender to the name when compared with its magnificent rival at the west end.

Touching the mere skirts of this subject of the church towers would evidently prove a lengthy recreation; and so the temptation to go on must be resisted at this point; and the roofs which come next in the list shall not be allowed to beguile us even to the same extent,—certainly not in the notes in this number. They may appropriately be noticed with the other woodwork, the wooden pulpits and the stone ones, the parcloses, seats, tables and chests, the fonts, the tombs, ironwork, and other minor details which still exist to give interest to these quiet little towns and villages. The great barns—four very fine stone barns were inspected—and the domestic buildings would deserve a little treatise, not that there are as many of them, after all, as the heart would desire. Let it suffice for the present moment to mention that the excursion was brought to an end in due form on Saturday, and that the company, brought together from every part of England, and largely reinforced from Ireland, dispersed itself to the four winds very speedily thereafter, well satisfied with the county of Somerset, with its old buildings, with the mingling of grand and pleasant scenery, with the well-intentioned people, and with the obliging ways and the capacity of Mr. F. C. George, the worthy host of the model head-quarters,—the Swan Hotel at Wells.

TRAVELLING BACKWARDS.

It seems as if the external mountains had lost some of their charm; for a Swiss caterer has been compelled to devise a new expedient to attract the foreign tourist. We doubt whether this effort was necessary. So far, the season has been a bad one in Switzerland; the weather at home has not been suggestive of foreign travel, and the state of business generally has enforced the necessity of economy in the matter of holidays. If foreign hotel-keepers find that the times are not prosperous, this is due to other causes than the want of new attractions. Nevertheless, the new tavern which will constitute this year's sensation at Zurich is still worth notice. It is formed in a subterraneous passage where the visitor is called upon to forget modern civilisation, and plunge suddenly into the darkness of the Middle Ages. By this transition he is promised the advantage of contemplating some of the artistic merits which distinguished that epoch. The walls of this grotto are ornamented with numerous antique inscriptions; and at the far end, rising majestically in the shade, may be distinguished huge casks of wine painted in various colours. On the tables there are bread, pipes, and tobacco, which the public may consume *ad libitum*. At first it was thought that tobacco was a little too modern; but the practical conviction that it was impossible to do without it carried the day, and tobacco is admitted. On the other hand, the far more modern invention of matches was energetically repudiated, and persons who want a light must avail themselves of the flints and touchwood placed at their disposal. Of course, there are no such things as bottles or glasses, but there is a plentiful supply of quaint jugs, horns, and goblets. The waitresses are dressed as châtelaines of the Middle Ages; the seats are of carved wood, carefully collected for this purpose, and dating for the most part from the thirteenth and fourteenth centuries (?). From all that we have heard, the illusion is well kept up; and this is further increased by the exclusion of newspapers, and the substitution in their stead of old chronicles published in the sixteenth and seventeenth centuries.

Public Mortuaries for London.—In the Consistory Court, on the 11th inst., Dr. Tristram, the Chancellor of the Diocese of London, gave judgment in the case of the application on the part of the Rector of St. George's, Hanover-square, and Mr. Hugh H. Seymour and the Duke of Westminster, the churchwardens, for a faculty to authorise the erection of a parochial mortuary, with a *post-mortem* room attached, on the old burial-ground between Mount-street and South-street. The application was opposed by Mr. Hall, the lessee and occupier of a house in Mount-street abutting on the burial-ground, and other lessees in the neighbourhood, and also by Lord George Paget, the lessee and occupier of a house in Farm-street. One ground of opposition was that the site was unsuitable and inconvenient, and that the erection of a mortuary would be injurious to the health of the neighbourhood, as well as detrimental to the adjoining property. The learned chancellor decreed a faculty, subject to the observance of certain sanitary precautions. The case of St. Matthew's, Bethnal-green, which was before the court some months back, was also concluded, and a mortuary ordered to be made in the old burial-ground.

THE YARMOUTH MEETING OF THE BRITISH ARCHÆOLOGICAL ASSOCIATION.*

Leaving Filby, the excursionists had a pleasant drive to Ludham, where the Abbot of St. Benet's formerly had a palace. This building was nearly destroyed by fire in 1611, and the remains were subsequently appropriated for use as a farm-house. What was once the chapel of the palace may yet be found in a granary on the premises. The church much needs restoration. In the chancel is a screen, having the figures of twelve saints painted on the lower panels; the font, a very old one, bears the symbols of the Evangelists; and on the walls are brasses and tablets to the members of several families. Mr. Loftus Brock pointed to and explained the principal features of this building, which he regarded as encyclopædic, their variety being so great, showing such numerous alterations, removals, and additions.

The site of the once great Abbey of St. Benet, at Holm, situate in the parish of Horning, was the next resting-place. The ruins and the history of this abbey furnished abundance of material for comment and reflection. The Rev. W. White published, some years ago, in a history of Norfolk, a very complete description of this establishment.

In the evening a meeting was held in the Town-hall, the Mayor in the chair, to hear papers read by Mr. Thomas Morgan, on "East Anglian History in Saxon Times"; by Mr. Lambert, on "Maces"; and by Mr. H. W. Henfrey, "On the Ancient Coinage of Norfolk."

On Wednesday, the 13th, the members crossed the Yare, and, entering Suffolk, proceeded to inspect the Roman camp at Burgh Castle, which was described by Dr. Raven. There could be no doubt, he said, that Burgh Castle was the ancient Roman fortress of Garianonum. Sir Henry Spelman, it was true, identified Garianonum with Caister; but comparing what was not to be seen at Caister with what was to be seen at Burgh, the balance of evidence was against the conclusion of Sir H. Spelman. The masonry at Burgh Dr. Raven believed to be all of one period. The towers and the upper part of the walls were of a considerably later date than the rest of the work, as was clearly shown where there have been settlements. Mr. Harrod, who made excavations under the direction of the late Sir John Boileau, was of opinion that a British earthwork was utilised by the Romans, because the soil within the walls is very much higher than that outside. Dr. Raven thought that the members of the Association would, without much hesitation, pronounce it to have been a four-walled or square camp, though there was no wall remaining on the western side next the river.

Mr. Loftus Brock made some remarks on the architectural features of the wall of the camp. Its masonry was like that of a wall in Camomile-street, Bishopsgate, which he had maintained to be part of the wall enclosing ancient Londinium. The work in the walls was of two periods. The mortar of the lower part was made up with pounded brick; the mortar of the upper part of the wall had not this ingredient. The bastions, like those in London, had been built against the wall-buttresses, and not bonded with it. In the facing of the wall, however, the whole of the mortar contained pounded brick.

Mr. Thomas Morgan, F.S.A., remarked that these Roman camps were made upon mechanical principles. Polybius and others each described a particular kind of camp as made in their times. The early camps were nearly square, like those of Pevensey and Porchester. Other camps were in the proportion of 600 ft. by 400 ft.

Dr. Raven stated that the measurement of this camp would show that it belonged to the latter class.

The excursionists next proceeded to inspect the slight remains of St. Olave's Priory, which mainly consist of a vaulted crypt, now occupied as a labourers' dwelling. Mr. Loftus Brock gave a description of the priory, which was founded by Roger Fitzosbert in the reign of Henry III. An account of it and its priors is given by Dugdale. Other documents than those cited by that writer referring to this religious house have been recently discovered at Cambridge. This priory had but five or six monks, and it was amongst the first that were dissolved. The crypt, all but perfect, was divided by a central row of polished marble shafts, and was vaulted with brickwork,—another illustration of the use of brick at an early period. It was the monks' day-room, or fratry, as it was called in old documents. The upper story was evidently reached by two staircases. This raised a difficulty. Usually the dormitory was over the fratry. But one of the staircases seemed to have led to the church and the other to the refectory. The view that the church adjoined the wall beyond the garden, which in that case would have been the cloistered court, was supported by the fact that bones had been dug up behind it. Behind the crypt-cottage is an old barn, which twenty-five years ago had a carved roof and a few Gothic windows, now bricked up, called in tradition "the guests' room." This was undoubtedly the strangers' hall.

Fritton church, the next halting-place, was also described by Mr. Brock. The church, which has a round tower, is dedicated to St. Edmund. Sir John de Mautby in 1375 requested that his body should be buried in this church of St. Edmund, before the altar of St. Mary. The peculiarity of the church is in the manner in which it was enlarged about 1350. The church consists of a small nave and a chancel, which is lower than the nave, and a sacrarium, which is a step lower still. The little apse has three small Norman windows with zigzag mouldings, and one surrounded with remains of coloured decoration. This is not the only bit of mural colouring in the church. On the wall opposite the south door is a fresco of St. Christopher bearing the infant Saviour. This representation of St. Christopher is more common in churches in Norfolk and Suffolk than in any other part of England. Chancel, north wall, and tower are Norman, but the south wall was built in 1350, when the church was enlarged on that side only. The consequence of this method of enlargement has been to leave the north side of the chancel in line with the north wall, while the south side is several feet from the south wall. Much of the material of the old south wall had been used in making that erected in its stead. A good example of the Jacobean communion-tables, which Macaulay says were "irreverently termed oyster-boards by the Papists," is a feature in the church which marks another phase of ecclesiastical history.

After leaving the church the members and friends were entertained at luncheon by Mr. and Mrs. H. E. Buxton.

Herringfleet Church, which was next visited, also has a round tower. The church is dedicated to St. Margaret, and belonged to the Priory of St. Olave. Mr. Loftus Brock was unable to say that the round tower of this church was of Saxon date. But the east window of the tower was unquestionably Saxon, though whether it was taken from some older Saxon tower, or was made by Norman masons acquainted with Saxon work, is uncertain. The three other windows of the tower have architectural features common to the Norman and Saxon styles. In fact, nearly the whole church is of the Norman period. But the great feature of interest in the church is the patchwork of painted glass in the east window, brought piece by piece from time to time from the abbey of St. Edmund, at Bury. A great portion of the glass is, according to Mr. Brock, Flemish.

After glancing at Somerleyton Church, the party proceeded on to Lowestoft, and visited the parish church, of which a detailed description was given in a paper by Mr. J. L. Clemence. The church consists of a tower, nave, north and south aisles, chancel, south porch with parvise, and a crypt under the chancel. The oldest part of the church is the tower, which has no higher antiquity than the reign of Edward II. The lower part of the tower, judging from the mouldings, was built between 1307 and 1380. It was probably built to a more ancient structure, considerably smaller than the present edifice, referred to by a charter of Henry I. In 1870, Mr. Clemence, while removing old pews and walls, came upon the foundations of the original church, which extended no further than the third bay of the present church. The original church apparently had no aisles. It was 54 ft. long and 18 ft. wide, and its height was shown on the east face of the tower. The architect of the present church evidently desired to perpetuate the size of the old one, for on the second buttress from the porch he placed a rose, and the clearstory windows up to that point he made with two lights, while those eastward had three. Again, within the church, at the third pillar of the north arcade, is a pedestal, which at one time supported an image. The nave, aisles, chancel, and porch are of the time of Edward V. (1483), when the tower was raised, and the wooden spire, covered with lead, was added. Perhaps the church was built by Bishop Scrope, who, after quitting the bishopric, and wandering for many years, became vicar in 1478. The length of the nave and chancel is 157 ft. The tower is 70 ft., and the spire 50 ft. high. The porch has a good deal of flint tracery of good character. The entrance has some excellent groined work. The only interesting monument is that of Bishop Scrope, sometime bishop of Dromore, who died here in 1491, and was buried in the chancel.

On their way back to Yarmouth the excursionists made a short stay at Corton House, where they were entertained by Mr. J. J. Colman, M.P. In the evening there was a meeting in the Town-hall, Yarmouth, when interesting papers were read by Mr. Charles H. Compton, on "The Saxon Shore in Britain," and Mr. Henry Prigg, "On some recent Finds of Coins in Norfolk and Suffolk."

On Thursday, the 14th, the excursionists penetrated the heart of Suffolk. Leaving Yarmouth by train as early as 8·20 a.m., they proceeded to Harleston, where carriages were in waiting to convey them to Wingfield Castle and Church. By the arrival of contingents representing the Norfolk and Suffolk Archæological Societies, the number of the party was increased to about 150. Mr. R. M. Phipson, architect (Norwich), who is restoring the church, contributed an interesting paper, in the course of which he said that the castle, so-called, is not a castle, nor was it built for a castle. It was a moated manor-house, although after it was erected the first Earl of Suffolk, Michael de la Pole, obtained a licence to crenellate in 1384. This was, doubtless, soon after the house was built. The enclosure contained not quite an acre and a half of land. The entrance gateway is in the centre of the south side. At its four angles are octagon and semi-octagon turrets. In the north-west turret is a fairly spacious staircase, and in the other turrets small circular stone staircases, commencing from the first floor, and leading to the flat roof. These recesses were doubtless used as anterooms to the large central chamber, or "guard-room" as it was called, over the archway. The interior of the gatehouse is somewhat mutilated; but this Vandalism cannot be laid at the door of the president of the Association (Lord Waveney), as it was done before he was the owner. The entrance had a portcullis, but not a drawbridge. The living-rooms extended right and left, but with the exception of a few holes for floor-beams and openings for fireplaces, no traces of them exist. This fine old manor-house was altered by the Catelyns soon after they became possessed of it. They erected the buildings, with the fine brick chimneys and shafts, on the west. The present church at Wingfield was built partly in the fourteenth century and partly in the fifteenth. Sir John Wingfield left money in 1862 to found a collegiate church here for canons and priests. When that had been founded, the rebuilding of this church was commenced. This shows how one style gradually gave way to another. The tracery in the north chapel or vestry and the doors and arches of the nave are Decorated, while the arches and piers of the chancel, as well as the east window, have a Perpendicular character. The chancel is spacious, and has seven clearstory windows,—an unusual number for a Suffolk church. The east window of five lights still retains some of its early glass, consisting of the arms of the De la Poles, Staffords, and others. The roof is entirely modern, and so also are the stone corbels from which the principals spring. The stalls and screen, of Perpendicular work, remain in the chancel. The misereres have carved foliage underneath, varying slightly in design. The Perpendicular screen in the chancel arch has been sadly mutilated, but the bottom panels remain, and vestiges of the figures of SS. Peter and Paul are visible. The roof consists of three bays, with trussed rafter principals between each bay. The church has several monuments. One is to Sir John de Wingfield, erroneously assigned to the Duke of Suffolk, but the architectural work and the character of the armour show that it was fifty or sixty years before his time. Another tomb is to the memory of Michael de la Pole, second Earl of Suffolk, who built Cawston Church, in Norfolk. The figure, as well as that of the countess, is of wood, and

* See p. 917, *ante*.

said to be the finest of the kind existing. Another monument is to John de la Pole, who married Elizabeth Plantagenet.

On leaving Wingfield, the party made for the "Old Minster," at South Elmham. The square enclosure in which the ruins are situate, Lord Waveney said, has all the peculiarities of a Roman camp, is in a position dominating the glen below, and probably communicated with other similar stations. Of the minster the chancel can only be traced, the walls do not remain, but those of the nave are still standing. A semicircular apse, a *galilee*, very uncommon in small churches in England, and other interesting remains, were shown. Both the materials used and the mode of construction point to a very early period as the date of erection. Lord Waveney directed attention to certain things which led him to believe the church was never completed. Probably it was begun earlier than the Norman conquest, and that when that supervened, the work was stopped and the design forgotten. Of documentary evidence, all that is available is in some old court records, which refers to the minster-yard. The proximity of the abbey of South Elmham, situate on the road to the shrine at Walsingham, and the patronage given it by the Normans, who made it a favourite place, were mentioned.

Mr. Loftus Brock said he felt certain the church was Saxon work. It contained nothing which was Norman, it had all the signs of the very earliest churches, particularly those of the east rather than the west; and it was a favourite theory of his that the Christian church of England was based upon the Greek church, not the Latin, as some people supposed. The building he regarded as a most interesting one, worthy the most attentive consideration of archæologists.

The party then proceeded to Bungay, *viâ* Flixton. It was a part of the programme that Flixton Hall should be visited; but as the day was far advanced the greater number of the members had to forego this pleasure. It was past five when Bungay was reached, and as the special train engaged for the occasion was arranged to start at 5·10 there was no time to visit either the church or the castle.

At an evening meeting in the Town-hall, Yarmouth, Mr. Loftus Brock read a paper on the Round Towers of Norfolk and Suffolk, the origin of which has been connected with many strange and delusive theories. The dates of the towers, he said, were from 1100 to 1150, and with very few exceptions these peculiar parts of churches belong to the two counties mentioned, Norfolk, however, having many more than Suffolk. The evidence was that these towers were Saxon in their construction, and that the earliest known in East Anglia were of Saxon date. The fact was also pointed out that similar circular towers were found on that part of the continent opposite. Only fourteen or fifteen such towers were known to stand elsewhere in England. The fact that such had been found in other districts was evidence that the form was well known by the people and could have been adopted by them if they had chosen. In Sussex, for instance, there was a great deal of flint stone, which, following the example set in Norfolk and Suffolk, might have been used, and thus saved the preparation of quoins.

The Vicar (Rev. G. Venables) wished to learn something with reference to the round towers of Ireland, which were said to be of a date anterior to those Mr. Brock had described, and by some were thought to be connected with sun or Baal worship.

Mr. Picton said the last-named theory had been exploded. The towers being all near the coast, it was though the inhabitants used them for storing property during the raids so frequently made by rovers and pirates. The Rhenish towers were not regarded as coeval with the Saxon.

Dr. Raven concluded the business of the meeting with interesting particulars relative to Bungay Church, a visit to which had been proposed, but was necessarily deferred.

On Friday, the 15th, the members proceeded by rail to Darsham, where the church was visited. The Rev. Mr. Thorpe, vicar of Darsham, read some notes, for which he was indebted to the late Mr. Hakewill.

The party next proceeded to Dunwich, the site of the Roman station Sitomagus. Numerous fragments of Roman tiles are to be seen in the ruins of the few remaining edifices that existed in Dunwich in Mediæval times. A very ancient road leads from Dunwich to Bury, and another to Norwich. In Saxon times Sitomagus became known as Dunmoc, a name which has a hallowed memory; for upon the shores of Dunmoc, about 630, landed the Burgundian monk Felix, who became the first Bishop of East Anglia, and had his see at Dunmoc. In 673 another see was founded at North Elmham; but during the incursion of the Danes they were amalgamated, and during the Norman period the see was transferred first to Thetford and shortly afterwards to Norwich. Dunwich in its palmy days had six churches, and also convents, hospitals, and other public buildings. On the east side of the tower of the desolated church of All Saints, which stands within a few yards of the cliff, Mr. Loftus Brock pointed out a characteristic Saxon window, arched with Roman bricks. He is of opinion that the base and inner part of the tower are Saxon. There are several interesting remains of the Norman period. The most notable is a fragment of the Chapel of St. James's Hospital for lepers. This consists of a chancel and semicircular apse, which had a fine arcade. Several arches remain almost intact, while portions of others at the end of the ruin show that the arcade was continued beyond the apse. The Grey Friars' Monastery, standing amid a corn-field, which is encircled by the old monastery walls, evidently built of the materials of some more ancient structure, is another interesting relic of Mediæval times. This monastery was founded by Richard Fitz John, in the reign of Henry III. At the time when these monastic establishments and churches were in their glory and splendour, they were surrounded by a large and enterprising community. Dunwich had a harbour which made it a shipping port of some importance. Henry III. called upon the shipmen of Dunwich to furnish him with forty vessels for his service. A reference to Dunwich in the Harleian MSS. in the British Museum (read to the members of the Association by Mr. Thomas Morgan) shows that the place was, in these days, strongly defended. The MSS. say that Robert, Earl of Leicester, who took the part of Prince Henry against his father, Henry II., came "to the said towne of Dunwich to have taken it against the king. But when he came heere and beheld the strength thereof, it was terror and feare unto him to behold it, and soe retyred, both he and his people." A plan of Dunwich made in the sixteenth century, and in the possession of Mr. St. John Barne (kindly exhibited to the members at his house, where they were hospitably received), shows what Dunwich was even in those days. A river ran for a long distance almost parallel with the coast, and wound more inland just to the north of Dunwich. On this plan, the monastery of the Grey Friars of the Church of All Saints, now near the cliff, are shown as being a long way from the sea, between which and them are marked various streets and public buildings. All these latter are gone, with many and many a rood of ground. In the time of Edward III., when the port was made useless, 400 houses were swept into the sea. Between 1535 and 1600 four churches disappeared. In 1677 the Market Place went. In 1702 St. Peter's Church was undermined and fell. Dunwich has now about twenty houses and 200 inhabitants. It sent two members to Parliament from the days of Edward I. to 1832. Many of the above facts were stated to the members by Mr. R. M. Phipson, of Norwich, who was called upon to perform that duty in the absence of Mr. Fisher, who was to have read a paper on the subject.

The party afterwards visited Blythburgh and inspected the church. The parish presents another instance, so common in the Eastern counties, of a thinly-populated parish possessing a grand church. Blythburgh has interesting associations, some of which were treated of by Dr. Raven in a very pleasant paper. Though possessing on the surface, Dr. Raven says, slender traces of its ancient importance, this village possesses Roman remains of more than usual interest. A priory, of which there are some remains, was built here by the Abbot of St. Osyth, Essex, in 1130, and it extended nearly to the church. The monks were of the rule of St. Augustine. The church is Perpendicular, dating from about 1430, and has chancel and nave under the same roof, and north and south aisles. The roof, though of a late and depressed character, is richly ornamented with angels, bosses, and the sacred monogram repeated several times on every timber. This church, which had two chapels, each with its altar, must have had a gorgeous interior in pre-Reformation times, and even later; for when Will Dowsing made his visitation he ordered twenty cherubims to be broken down in the church and chancel, and 200 pictures to be removed. Part of the original screen, which has some beautifully-carved figures of the Evangelists in high relief, however, escaped destruction. There are some carved figures as finials on the seats on the north side. The seven deadly sins appear to have been represented in these figures. The corpulent figure of a monk evidently signifies gluttony. Other figures represent the husbandmen engaged in sowing and in taking up a sheaf. "Jack o' th' clock," who anciently struck the hours, has long been deposed from office, and stands in the tower. The chief external features of the church are the clearstory, containing eighteen windows on each side, an open parapet of quatrefoils, a tower of two stories, and a flying buttress against the north door.

At Southwold, which was next visited, a detailed description of the church was given by Mr. R. M. Phipson, F.S.A. Originally there was only a chapel to Wangford here. The Abbot of Bury built a small church here in 1202. That church was destroyed by fire late in the fifteenth century. The present fabric was built in the reign of Henry VIII. The church is divided into eighteen bays, six of which form the chancel, separated from the nave by a rood-screen. The tower is 100 ft. high. A sanctus bell-cot marks the junction of chancel and nave. In the chancel are remnants of mutilated stalls and seats. The chancel-screen and two side screens, which enclose north and south chapels, are amongst the richest examples of the kind. For the elaborate nature and extent of the ornamentation the rood-screen has hardly an equal. The old chancel-roof was richly decorated. Mr. Phipson was compelled to remove it when restoring the church, because of the rottenness of the wood; but he has replaced it by one in which the old design is repeated.

At Yarmouth in the evening, a sectional meeting was held to hear a paper by Mr. C. Tenniswood on "The Ancient Charters of Great Yarmouth," followed by a description by Mr. Prigg of bronze implements found in Norfolk and Suffolk.

Saturday was spent in Yarmouth and its immediate neighbourhood. The far-famed church of St. Nicholas was described to the visitors by Archdeacon Nevill and Mr. Loftus Brock. The Rows and the Tolhouse were afterwards inspected, and in the afternoon the party proceeded to Gorleston Church and the remains of the Priory. After being entertained at Ferryside, Southtown, the residence of the Mayor, the members dispersed, until the evening, when, at a meeting held in the Town-hall, Mr. W. de Gray Birch gave a very interesting account of the ancient charters and seals of the corporation.

On Monday, Tuesday, and Wednesday the Congress took up its quarters in Norwich. Of its doings there, as well as of some of its already-mentioned proceedings at Yarmouth during Saturday, we shall have more to say next week.

NATIONAL WATER SUPPLY EXHIBITION AT ALEXANDRA PALACE.

This exhibition, which in extent is at present a small affair in proportion to its title, was formally opened on the 14th inst. by the Lord Mayor, in the presence of Mr. Edwin Chadwick, C.B., and other well-known sanitary reformers. Making due allowance for the fact that the exhibition includes within its scope a great deal of detail which cannot be objectively illustrated in the form of tangible "exhibits," we are bound to say that it is at present very fragmentary and incomplete. The exhibition is, however, intended to be permanent, and its promoters declare their intention of making it more complete as time goes on. The avowed object of the exhibition is to popularise information as to water-supply,—its sources, methods of obtaining or "winning" it, impounding it, purifying it, and conducting it to the places where it is to be consumed; its chemistry, as affecting culinary and dietetic purposes and the industrial arts, and also as bearing on its action on the pipes which convey it and the vessels in which it is stored; and its possible sources of contamination. This is a wide and an important programme, and its fulfilment cannot but conduce greatly to the public welfare, for a popular acquaintance with the possibilities of water-

supply, as with those of other branches of sanitary science, will tend, at any rate, to keep corporations, local boards, and sanitary authorities up to the performance of their duty.

The exhibition on Muswell Hill includes two or three glass cases full of Blue Books on water supply, rainfall, river pollution, and cognate questions, each volume being in itself a mine of facts sufficient to satiate even a Gradgrind. It is to be presumed that these volumes will be accessible to those of the visitors who may wish to consult them, although, perhaps, few who are not specialists would be able to thread their way through such an amazing labyrinth of facts and figures. What seems to be required (as has been before urged in the *Builder*) is that the details and statistics contained in so many separate Blue Books and reports, and in the archives of Governmental departments and scientific societies, should be systematically collated and rendered readily accessible to all who may wish to consult them.

The exhibition also includes a number of maps and diagrams, showing water-shed areas and gathering-grounds, together with plans and sections of waterworks executed, or proposed to be executed, by Mr. Robert Rawlinson and other well-known engineers.

The mechanical exhibits include those of Messrs. Le Grand & Sutcliff, who show their well-known Abyssinian tube-wells; of the Diamond Rock Boring Company, who exhibit diamond-toothed drill-heads, and a number of cores of various diameters and strata; of Messrs. Thomas Docwra & Son, whose display includes two large drill-heads, 20½ in. and 23 in. in diameter, with the diamonds set on Gulland's patent principle; and of Messrs. John Warner & Son, who have a large show of pumps, turbines, and other appliances, including some for preventing waste of water in closets and lavatories. Water-waste prevention is also the object aimed at in Messrs. John Carter & Co.'s patent closed cistern. The subject of water purification is illustrated on a small scale by the filters for domestic purposes, exhibited by the Silicated Carbon Company, Mr. J. F. Clarke, Mr. Bischof, and the Boston Filter Company.

What may be called the archæological aspect of the subject is at present very meagrely illustrated. Messrs. Warner & Son show a very interesting old print, "Veue de la Machine de Marly," and in one of the glass cases is a black-letter book apparently treating of the conservancy of the Thames (the title-page was not exhibited, and in this as in some other instances a legible explanatory label would be of advantage). The only other exhibit of an archæological character which we noticed was a specimen of water-main formerly used (at what period the label did not state) in Colchester. This specimen is composed of a material resembling burnt fire-clay in appearance, about 1 in. thick all round, and with an internal diameter of 3½ in. or 4 in. The exterior of this pipe is covered with thin sheet iron, now very much worn with rust. No information was given as to the amount of pressure such pipes would bear, or as to their duration.

Incomplete as the exhibition confessedly is, we have said enough to show that it is one of much value, and, regarding it as the nucleus of a much more complete and representative collection, we shall watch its progress with interest.

THE MANUFACTURE OF PORTLAND CEMENT.

Among the improvements that have been introduced in connexion with the plant and machinery employed in the manufacture of Portland cement, "Johnson's Patent Chamber Kiln" appears to deserve notice. In the ordinary manufacture of Portland cement, after the raw materials,—generally composed of chalk and clay,—have been subjected to the process of washing or mixing in the "wash-mill," the slurry or washed material is pumped or conveyed by other mechanical means into reservoirs or settling-ponds, where the material is allowed to remain several weeks in order that the superincumbent water may be drawn off. When this slow and tedious operation is completed, the partially solidified slurry or "slip," is conveyed by barrows to the flats, there to undergo the process of drying by the heat derived from coke-ovens beneath.

The disadvantages attending the process described are these:—The lengthened period necessary for the precipitation of the material in the settling-ponds, and the danger of unequal subsidence and consequent separation of the mixed materials; the labour attending the conveyance of the slurry from the backs to the drying flats; and, lastly, the serious wear and tear and continual dilapidation of the flats, in consequence of the unequal and sudden expansion and contraction of the floor, unavoidable when subjected to the influence of the heat given off from the coke-ovens beneath, and the frigid temperature of the sluice-liquid slurry when deposited on the floor above.

The new arrangement to which we are referring consists of a kiln of the ordinary construction; but, instead of being surmounted with a cone, through the top of which the waste heat is liberated, it is arched over, forming a crown of semicircular shape. One side of this arch is continued, with a flat bottom, in a horizontal direction, forming a semicircular flue or chamber, supported on piers or ground work. The waste heat from the kiln traverses the length of this flue, so to call it, and eventually escapes through a chimney at the further end. When the kiln is charged, the liquid slurry in the wash-mill is pumped or conveyed through pipes to the top of the flue or chamber; these pipes are furnished with outlets, through which the slurry flows, dropping through manholes on the roof of the chamber, and finally depositing itself on the floor or bottom of the same. Sufficient material having entered the chamber requisite for the recharging of the kiln, the manholes and other apertures are closed, the kiln is fired, and the heat evolved, passing over the surface of the slurry in the flue or chamber, thoroughly dries the material ready for the reloading of the kiln. Thus the heat given off from one charge is made to dry the slurry requisite for the reloading. The chamber is constructed of sufficient height to enable a workman to move about in it conveniently.

The superiority the inventor claims for his chamber-kiln in preference to the settling-backs and drying-flats, is in the first place the absence of the disadvantages described above, besides being able to utilise the waste heat from the kilns in an economical and practical manner, and dispensing entirely with the coke-ovens, an expensive and fuel-wasting mode of generating heat necessary for the drying of the slip. Other advantages are apparent, but one of most importance is, according to the inventor, that by the adoption of this kiln stronger cement can be and is made than by the settling-tank and drying-flat process. Why it is so is not quite obvious, but it is maintained that the speedy method of treatment, combined with equality in drying and a uniform result in calcination, is valuable where strong cement is required. The chamber-kiln can be seen in operation at several of the cement manufactories on the Thames.

A DOUBLE CHURCH AT WYMONDHAM, NORFOLK.

The recent legal decision in the Arundel Church case naturally leads to the inquiry whether there are examples in this country of churches, the eastern or chancel portion of which formed distinct ecclesiastical buildings from the western or nave portion.

The church of Wymondham, in Norfolk, although differing in many important particulars from that of Arundel, may yet serve to throw light upon this very interesting inquiry. In that particular church, at any rate, the eastern, or choir portion, formed a positively distinct and separate church from the western, or nave portion of the building.

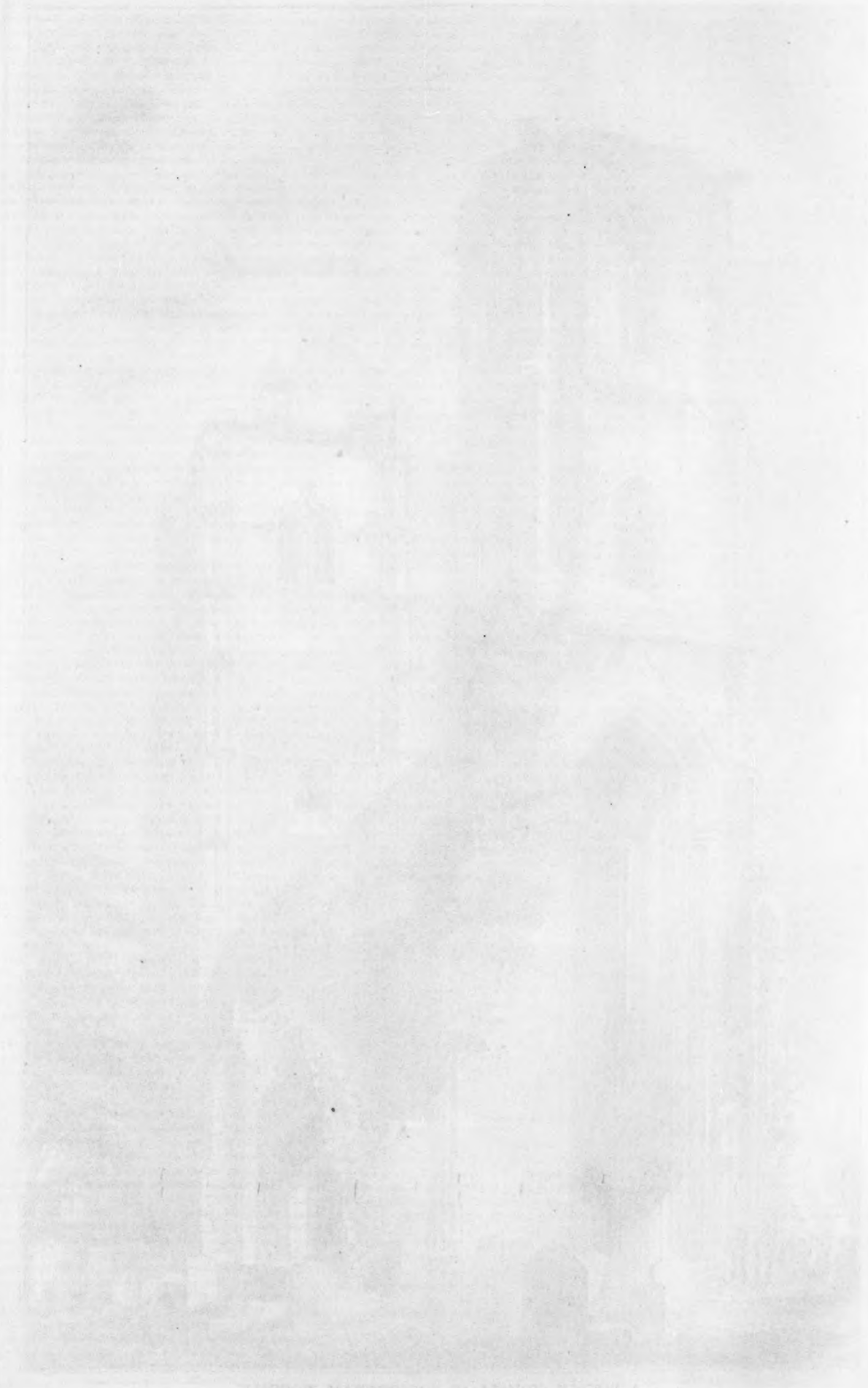
The first glimpse which is obtained of Wymondham Church, with its two noble towers, lofty and magnificent nave, and massive fragments of ruined walls to the east, gives the impression of a stately cruciform minster, with a single western tower, and a graceful octagon lantern at the crossing, and so strong is this impression upon the mind that it is absolutely so described in the "Norfolk County Excursionist." A closer and more careful examination will, however, at once convince the architect or antiquary that this idea is quite erroneous, and that, instead of having formed originally one vast cruciform church, it is absolutely two distinct churches, one of which is still perfect, and consists of a massive and noble western tower, and a long nave and aisles. What at first sight appears to have been a central tower, or lantern, was in reality the western tower of a second church, built immediately against the eastern end of the first church. This seems to be proved by the following facts. Firstly, there is no indication of any arch opening from this tower westward, and leading into the present existing church, but in its place is a solidly-constructed wall with two small doorways, which opened on either side of the altar of the western, or existing, church, and formed the only communication between the two buildings. After examining this wall some six months back, we were led to the conclusion that the whole of this wall is coeval with the tower. Secondly, there are no lateral arches to this tower leading into transepts, but in their place are long windows, with low doorways beneath them, which led into porches, the remains of which can be distinctly traced. Thirdly, the only arch under this tower is on its eastern side; this arch opened into the monastic church, at its western end, but curiously enough it was not in the centre of the end in question, and there is one very singular and puzzling circumstance about this, *i.e.*, although the south wall of the nave was further from the corresponding respond of the arch than the north wall was from its respond, yet the weathering of the roof shows that its apex was exactly over the centre of the arch. It is quite impossible to conceive how the roof could have been arranged.

The monastery of Wymondham was founded in the year 1130, by William de Albini, for "monks," or rather canons of the order of St. Augustine. Now the fine Norman arcade and triforium of the nave would exactly suit this date, and it is most probable that as first erected the church may have consisted of a nave and aisles, with perhaps transepts and a short apsidal choir, but in the fifteenth century a great alteration seems to have taken place in the building. The ancient clearstory and aisles of the nave were rebuilt, the old chancel and transepts taken down, the whole nave was given up to the parish church, though probably before that time the monks' choir occupied the two or three eastern bays of the nave. The beautiful octagonal tower was erected, together with the wall which shuts it out from the parochial church, and a completely new church was erected to the east. What was the exact plan of this church cannot well be determined, though, as far as can at present be made out, it appears to have consisted of a tower, square to the height of the roof of the church, and octagonal above (this tower, which still exists, nearly perfect, is still called "the old Priory tower" by some of the older inhabitants of the place); two porches opening north and south into this tower, a nave, and rather narrow aisles, and a very large and important chapel to the south. There appears to have been no communication between the monastic and the parochial churches, except by two very small doorways, one on either side of the altar of the latter.

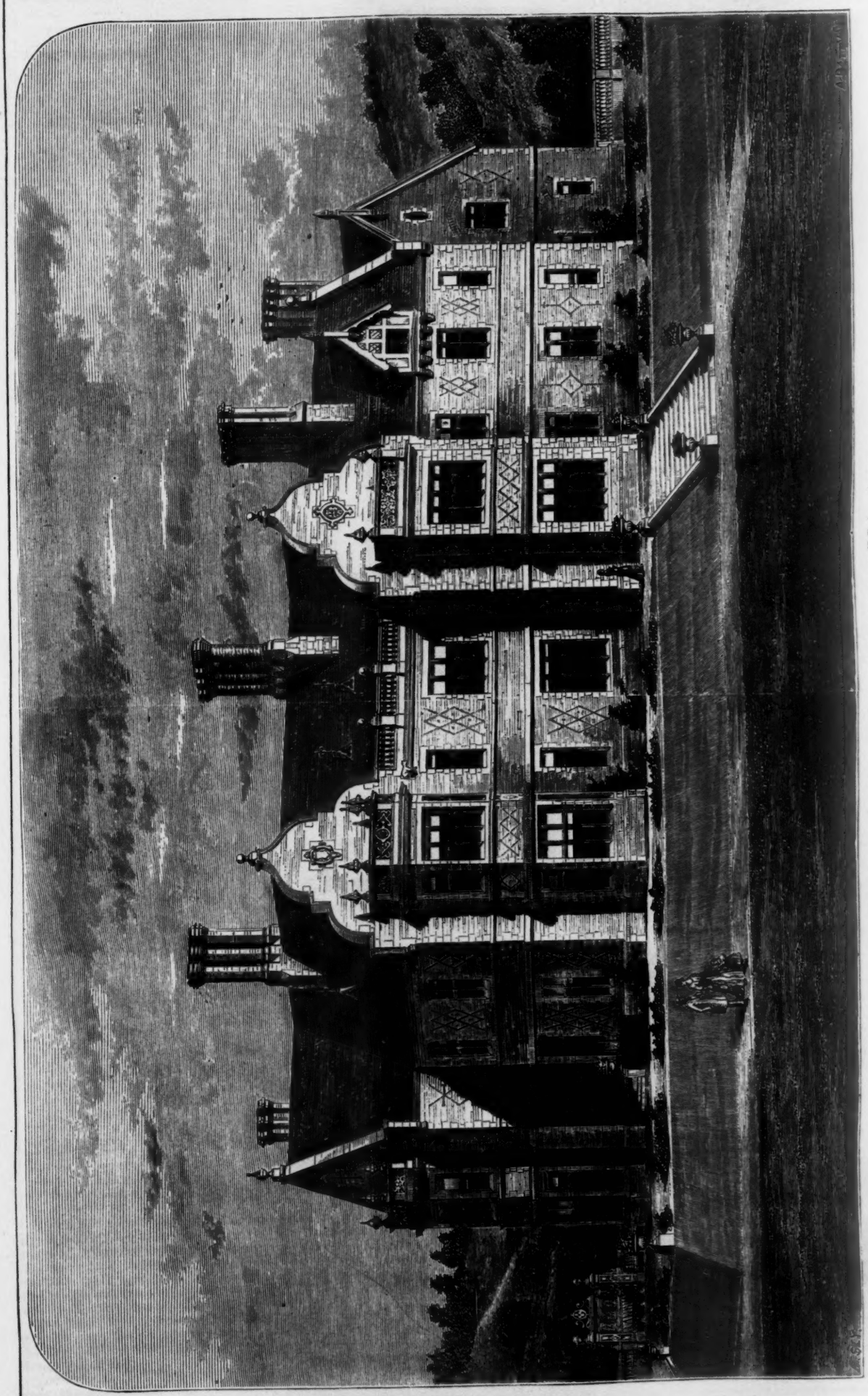
The western tower is a noble example of Late Perpendicular work, probably not earlier than the commencement of the sixteenth century, and the roof of the nave and south aisle are extremely magnificent. The font is large, and adorned with fifteenth-century sculpture. There is no other ancient furniture, but there is a very singular early Italian Renaissance monument on the south side of the altar, probably one of the very earliest examples of the style in England, and may have been executed by some of the Italian workmen who were employed upon Bishop West's chapel at Ely, as the details bear some resemblance. There is a tradition that this was the monument of "the last prior," but it looks almost too early for that. The three arched openings in the monument, and its position, rather suggest the idea that it may have been intended to serve the purpose of "sedilia," as well as a tomb.

There are no remains of the monastic buildings, though, from the unevenness of the ground, it is probable that they were on the south side of the monastic church. The church of Leybourne, near Cromer, appears to have been another example of a double church, and here, as at Wymondham, the eastern church is in ruins. At Leybourne, however, the two churches did not join on to one another in a continuous line as at Wymondham, but the nave of the eastern church was so much to the north of the western as to be nearly angle to angle.

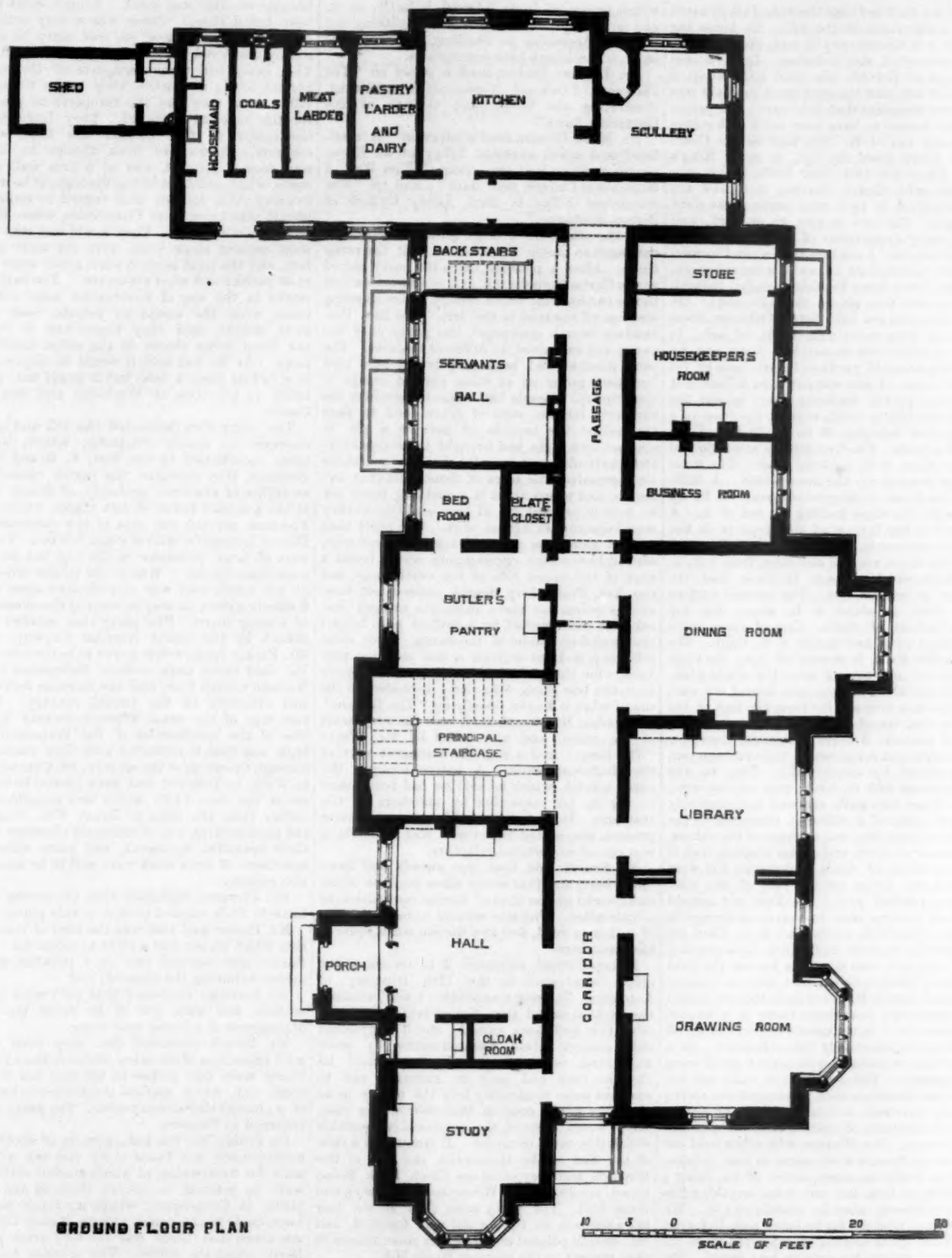
At Reepham, in the same county, are two churches which do touch one another angle to angle, but they are in every way totally distinct buildings, without any attempt being made to make them appear one church, as was the evident intention at Wymondham.



A DOUBLE CHURCH AT WYMONDHAM, NORFOLK.



LYTCHET HEATH, DORSET.—Mr. David Brandon, F.S.A., Architect.



LYTCHET HEATH.—*Plan.*

LYTCHET HEATH HOUSE.

Lytchet Heath, of which a plan and perspective view are given, is a newly-erected country-house, situated near to Wareham, in the county of Dorset, upon elevated ground commanding extensive and agreeable views overlooking Branksea Island and the ruins of Corfe Castle, with the English Channel in the distance.

The period of architecture which has been adopted, both for the interior and exterior of the house, is that of the early part of the seventeenth century.

The walls are built hollow, with bricks made upon the estate, faced with red bricks from Fareham, supplied by Mr. Court, and the stonework of the cornices, windows, quoins, &c., is executed in Bath stone, from Box. The roofs are covered with tiles obtained from Broseley. The general arrangement of the apartments, staircases, and the offices is shown upon the ground-plan. The house was built for the Right Hon. Lord Eustace Cecil, from the designs of Mr. David Brandon. The builders were Messrs. Simpson & Son, of Paddington.

Birmingham.—Mr. George Dixon, the arbitrator appointed in the dispute between the operative gasfitters of Birmingham and their employers relative to the proposed discontinuance of the 15 per cent. bonus granted to the men in 1872, has made his award, decreeing a reduction of the bonus to 10 per cent.

THE ROYAL ARCHÆOLOGICAL INSTITUTE AT TAUNTON.*

In the Architectural Section, on Thursday, the 7th inst., the Rev. Sydenham Hervey read a paper on "The Supposed Palace of Alfred the Great at Wedmore." After giving a general description of the district, and of the "Island of Wedmore" in particular, Mr. Hervey quoted from contemporary or early authors to prove Alfred's connexion with Wedmore. Referring to that portion of the hamlet where tradition places the king's house, he said,—The field is a grass field of about ten acres. The excavations cover about two acres in one corner of it. The

* See pp. 892, 918, *ante*.

name of the field is Court Garden. It is situated on the south slope of the hill. No house has stood there in the memory of man, nor, I believe, in the memory of man's father. Loose stones and heaps of Cornish tile were lying about it some years ago, and the surface of the field was much more irregular than it is now. Old people remember houses to have been built with stones taken away out of it. The next field to Court Garden, lower down the hill, is called King's Close. There are two other fields, which once were one with Court Garden, but now are separated from it by a road made about sixty years ago. The one is now an orchard, and there is every appearance of the house having extended into it. I am told that when the road was made foundations of walls were taken up. The other, lower down the field, is called Redard, and in it tradition places the fish-ponds. On first coming into the field from Wedmore, there is the road, lying under 4 ft. or 5ft. of soil. It is made of good-sized stones, laid down one by one. Only about 15 yards in length have as yet been laid open. I was stopped from following it any further by not knowing where to put the soil. To the left or south-east of the road is a long detached building, 95 ft. by 39 ft., of the shape of a barn. The foundations are rude and irregular, from 4 ft. to 5 ft. thick. The walls were not carried up the same width. A little further on is an underground-room, 30 ft. by 16 ft., with two steps leading up out of it. A key found at the bottom of the steps is in the temporary museum. Two of the walls, and part of the third, are still standing, from 4 ft. to 7 ft. high,—high enough to show that the roof was an arched one. The present surface of the field is about 4 ft. above the top of the highest of them. One of these walls is plastered over, and nearly 6 ft. thick. The one opposite to it is dovetailed into the rock. The floor did not extend over the whole room. A trench ran along the opposite side of the wall, and ended in a hole not far from the foot of the steps. In that trench were lying the two largest pieces of pottery. A drain runs under the steps. The underground room seems to have been partially enclosed by three walls. That on the north is about 165 ft. long; that on the west, 120 ft. These two walls are well and regularly built, and quite of a different character to the barn-shaped building, and to some of the others. At the lower or south end of the western wall is a curious block of walls. Between the west wall and the hedge by the side of the road there is a pitched yard. We have not opened enough of it to be able to make out its course or shape. The well, which had been filled up with rubbish, is about 20 ft. deep. It is steyned round. An old man who has known the field for seventy years tells me that there is another well somewhere in it. Very little mortar is used in the masonry; sometimes there is a set-off, sometimes not. I do not know whether the set-off is or is not a distinctively Saxon feature. As a general rule, width and wideness of walls seem to go together. The better-built walls are not so wide as the under ones. Amongst the authorities who have seen it there has been an almost universal consensus of opinion that the masonry is not Roman. Mr. Bloxam, who alone held out for its being Roman work, came to that opinion, I believe, solely in consequence of its being a likely Roman site, and not from anything distinctively Roman that he could point to. Mr. Parker, jun., held out for its being post-Reformation; I am quite unable to say what were the grounds on which his opinion was based. Between the Roman and the post-Reformation there have been many suggestions. With regard to the relics found, some of which are exhibited in the Temporary Museum, there is a great number of small broken bits of coarse black and brown pottery, Roman according to Mr. Bloxam, Saxon according to others. There is one bit which has been called British. There is also a number of bits of glazed pottery. There are some glazed roof-tiles of various patterns, and also some shingle tiles, a horse-shoe, spur, arrow-head, spear-head, knife-blades, keys, nails, pair of compasses, and other bits of iron and other metal, three bits of slate, rather curious: on one are a few bars of music, diamond-shaped notes, with the words *Kyrie* and *Christe*. It has been ascribed to the latter half of the sixteenth century. The other side bears the name of Wolman. On another bit is a little man with his arms shed in his side. This came out of the well. Two silver pennies have been found,—Edward and Richard; four jetons or tokens. One of these has the head which prevailed from Edward I. to IV. on it, and no inscription on either side,—nothing but pellets. According to Snelling, this would be early. The others have inscriptions.

Mr. Fairless Barber read a paper on "The Discovery of Original Muniments from Citeaux, illustrating the Origin and Growth of the Cistercian Rules."

Mr. M. H. Bloxam read a paper on "A mutilated and much abraised Effigy of an Ecclesiastic, built up into the external East Wall of Batheaston Church, near Bath"; and on "The Sepulchral Effigy in Bath Abbey Church of Bishop Montague."

In the afternoon a large party proceeded in carriages to Castle Neroche, to visit the camp there. After a pleasant drive the party halted at the Castle Neroche inn, and proceeded on foot to the earthworks, which occupy a commanding position off the road to the left. The Rev. Prebendary Scarth conducted the party over the camp, and explained its different features. The same mischief had been perpetrated here that had been going on at other ancient camps in the country. People had begun to demolish the ramparts for the sake of gravel, and to save themselves the trouble of making a pit at another spot. He had brought the company to that particular spot in order that they might see for themselves the work of demolition that had begun, and to ask them if something could not be done to prevent it. If they could do so they would accomplish a great work. The party then walked along the ridge of the outer rampart, around to the high encampment which forms a part of the upper side of the earthworks, and the Rev. Prebendary Scarth pointed out how, at this point, the three ramparts merged into one, and were carried by a devious path behind the mound or citadel of the camp. With some difficulty, and not without a few amusing mishaps,—for the ground was muddy and slippery from the late rains,—the party ascended to the top of what is known locally as "The Beacon." This point, Mr. Scarth said, was the very heart of the camp, and was called by Mr. Warre "The Keep," and it was the strongest part of the Mediæval castle. A native brought the party a brick, which he said he had been asked to dig up for inspection by members of the Institute. It was examined by several experts present, who stated that there was no doubt it was one of modern manufacture.

Mr. Scarth said that iron swords had been found here, and that would place the date of the earthworks at the time of Roman occupation, or a little after. The site seemed to be in the line of a Roman road, and two Roman roads seem to have met here.

Bishop Clifford supposed it to be one of the points mentioned in the 12th Itinerary of Antonine. Taunton was another; and certainly the position suited that theory better than any other that had been named; and if they could only confirm their measurements by some undoubted relics of Roman times,—and he thought they had only to excavate and to examine more thoroughly into the matter to do so,—they might confirm that view of the case. They would observe the commanding position which this camp occupied. It comprised a view of the line of the Quantocks, the line of the Mendips, and they could see Crook Peak, Brean Down, the camp near Wincanton (Cadbury), and Ham Hill. The party were then shown how the approach to the citadel was fortified, and Mr. Scarth pointed out its exact resemblance in that respect to the camp at Worle Hill.

Mr. Bloxam asked if there were any other Roman camp below, and if this was one of the twenty cities taken by Vespasian?

Mr. Scarth replied that they had a Roman villa not far from here, but he could not mention the exact locality. He was inclined to think that this place had been fortified chiefly with wood; wood being so plentiful in the country, people would not go to the trouble of making bricks. With respect to the construction of walls of camps, they were simply earthen ramparts, when the place was used for temporary occupation, the earth being thrown out of the ditch, and arranged in the form of a parallelogram. The most elaborate earthwork of that kind was the one near Dorchester, which was the finest in England. The second kind of wall was the stone rampart. Stones were roughly thrown together into the form of a wall. They found many instances of this in Gloucestershire, amongst the Cotswold Hills. They had also the dry walling, as at Worle Hill, near Weston-super-Mare, which was perhaps the oldest, because no lime was used. Roman coins had been found there. There was a very curious camp, which was now, he was sorry to say, totally destroyed, at Bowerwalls, near Clifton. That camp had three ramparts of the most perfect kind; and when they began to build villas there they tore the ramparts to pieces, for the sake of material. They found that the centre of the rampart was filled with concrete. Rocks had been thrown in, lime was poured upon it, and so a firm wall was made, which could not be dug through. If he were to carry them further with regard to walls he should take them from Cirencester, where they were made of stone. They would find that the most ancient stone walls were the most perfect, and the most ancient earthworks were the most perfect and most elaborate. The earliest works in the way of fortification were undertaken when the means for defence were the most simple, and they would find in Italy the finest hewn stones in the oldest fortifications. As he had said, it would be impossible to give this place a date, but it would date probably to the time of Worle-hill and Maiden Castle.

The party then descended the hill and were conveyed to Staple Fitzpaine, where, after being entertained by the Rev. F. B. and Mrs. Portman, they examined the parish church,—an edifice of the time, probably, of Henry VII. It has a square tower of two stages, which Dr. Freeman pointed out was of the character of Bishop Lydeard's, with a stage left out. There were no large pinnacles on the top, but simply a staircase-turret. Where the middle window on the north side was now situated there was formerly a door, as may be seen by the existence of a stoop there. The party then entered the church by the quaint Norman doorway, and Mr. Parker spoke a few words as to the interior. He said there were evident indications of a Norman church here, and the Norman doorway was evidently of the twelfth century. The rest was of the usual fifteenth-century type. One of the peculiarities of the Perpendicular style was, that it prevailed with little variation through the whole of the century. St. Cuthbert's, at Wells, he believed, had been proved to be of about the date 1430, which was considerably earlier than the time of Henry VII. One of the peculiarities, too, of Somerset churches was their beautiful woodwork, and some splendid specimens of such work were still to be seen in this church.

Mr. Portman explained that the screen was brought from another church to this place.

Mr. Parker said that was the kind of restoration which no one had a right to object to. Mr. Parker also noticed two very peculiar small arches adjoining the chancel; and

Mr. Portman explained that they were quite modern, and were put in to avoid the bad appearance of a blank wall there.

Mr. Parker remarked that they were very good imitations of the other arches in the church. There were two niches in the east end of the north wall, which marked the former existence of a chantry and chantry-altar. The party then returned to Taunton.

On Friday, the 8th inst., a party of about 120 excursionists left Taunton by the ten o'clock train for Bridgwater, at which station carriages were in waiting to convey them, in the first place, to Cannington, where a survey having been made of the parish church, Bishop Clifford remarked that there was no very great peculiarity about the edifice. The original foundation of the convent was held by Robert De Courcy, in the time of King Stephen. One writer had said in reference to it,—"I found a goodly church, at the east end of which was a church belonging to the Priory." He (Bishop Clifford) could not say whether that meant that a separate church for the priory was built at the east end, or whether it meant that a separate church was used by the nuns. There was, a few years ago, a communication from the church to the Manor House, which belonged formerly to the Priory, and the chancel was used by the Rogerses, who received it from the Crown, and likewise by the Cliffords as a family burying-place, for they buried in the chancel, and there were one or two inscriptions still remaining. The late Rev. Thomas Hugo, in a paper published by him, had given a good many charters relating to the presentation of several clergymen, it being always decided that the Priory had the right of presentation. There were twelve crosses on the walls outside, put up at the time of re-consecration. According to the

Roman ritual, these consecration crosses were put inside, but in many of the churches they were found on the outside. He had seen some in Wiltshire, and also, he believed, at Amesbury. The church had undergone many alterations from the time it was first erected, and the probability was that it was entirely rebuilt.

The excursionists then walked a short distance to inspect Blackmoor Manor House, one portion of which is thought to be an example of a domestic memorial chapel of the early sixteenth century, preserving the old arrangement of the western part of a chapel, divided into two stories, the lower for the domestics and the upper communicating with the principal rooms for the master of the house and his family, the eastern part being the whole height of the chapel, for the altar and officiating priest.

Proceeding on to Stogursey, the party visited the parish church, which has recently been restored at the cost of Sir Alexander Hood, bart. Here Mr. Bloxam gave a description of two recumbent stone effigies in the chancel. The earliest of the two was, he said, in the time of Edward III. or Richard II.; or, at any rate, the latter part of the fourteenth century. It probably represented the squire of the manor, and it appeared by his locks of hair to be of the Edwardian period. He was clad simply in a tunica, and from the absence of a super-tunica, or overcoat, he most likely died in the summer.

Sir Alexander Hood stated that he had come across an old manuscript a few years ago in which mention was made that in the body of the church, against the south wall, was a monument of Sir Ralph Verney, who died in the twenty-sixth year of Edward III. Before he died he made an agreement with the proprietor of the Priory to have a sitting-room, dining-room, cellar, office, &c., for himself and servant. He lived in that Priory for several years, and he (Sir Alexander Hood) believed the effigy now in question to be his monument.

Dr. E. A. Freeman said the church belonged to a class different from other monastic and parochial churches, for instead of having, as in most churches, aisles in the nave and no aisles in the choir, this church was of an exceptional character, in having aisles for the choir and none for the nave. The tower was square, not oblong, and was a fellow to the one of Leonard Stanley, in Gloucestershire, and also the tower of the abbey of Bath.

Stogursey Castle was next visited, after which the party proceeded to Fairfield House, an Elizabethan or Early Jacobean mansion, stated by Collinson, in his "History of Somersetshire," to have been commenced by Sir Thomas Palmer, who died in 1583, and to have been finished by his grandson, another Sir Thomas Palmer. Here the party were entertained at luncheon by Sir Alexander Hood.

Dodington Manor House and St. Audrie's were next visited, and the party returned to Taunton in the evening to attend a *conversazione* given by the Mayor.

On Saturday, the 9th, a visit was paid to the remains of Muchelney Abbey, where Mr. Long and the vicar of the parish, the Rev. S. O. Long, acted as guides. It was stated that at the extreme east end of the remains a stone coffin had been unearthed, which was found firmly built into what turned out to be the apse of the Saxon or Norman church. Subsequently other portions of the earlier stonework had been discovered. The lady-chapel of the more recent building had been constructed on the site of the old Norman chapel, and extended considerably beyond it to the east. The whole of the foundation of the north wall has been found, and in a small chapel, measuring about 20 ft. by 10 ft., was discovered the headless recumbent effigy of an ecclesiastic, the feet resting upon a conventional lion, bearing a very striking resemblance in treatment to some seen at Martock Church later in the day. Mr. Bloxam, the well-known authority on sepulchral monuments, on being asked his opinion on the figure, said it was the effigy of an abbot in full ecclesiastical vestments, and was fourteenth-century work. Mr. Shelmerdine gives the dimensions of the abbey church as 173 ft. long and 52 ft. wide; the total length, taking in the lady-chapel, being 216 ft. These figures do not correspond with those given by Collinson. Mr. Baker, in his brief explanation to the Institute, put the length of the church at 240 ft. and its breadth at 58 ft.

Visits to Martock Church and Manor House, Montacute House and Church, Stoke Church, South Petherton, and Barrington Court terminated the week.

On Monday, the 11th, the members of the Institute visited Wells and Glastonbury as mentioned in our last, and so the proceedings of the congress were brought to a close.

THE LARGEST TELESCOPE.

Messrs. Galloway, engineers, Knott Mill, Manchester, have constructed a gigantic telescope from the designs of Sir Henry Bessemer, who intends to erect the instrument at his residence on Denmark Hill, London. It is estimated to cost 40,000*l.*, and when completed is expected to be the most perfect and largest of its kind. It is now nearly three years since the attention of Sir Henry Bessemer was directed to this interesting subject. It was with him a desideratum that the instrument, notwithstanding its great magnitude, should be placed in a commodious and comfortable observatory, and not stand in the open air, exposed to all the vicissitudes of a climate like ours; and, further, that the instrument should be capable of being directed to any part of the heavens at will, without either waiting for the earth's motion, or for the assistance of any one but himself, so that at any hour of the night he could use it without climbing up long ladders or lying on his back in an uncomfortable and constrained position. With this view, he has designed a novel self-acting telescope, at which the observer can sit or stand in an upright position at the centre of the floor of the observatory, looking straight before him into the eye-piece, which is placed 5 ft. 6 in. above the floor, and from which position he need not move one inch for the purpose of viewing an object visible at any part of the whole hemisphere above. The observatory in which this large instrument is to be erected is approaching completion, and consists of a massive dwarf tower of 50 ft. in diameter, with a stone balustrade and promenade around it; in the centre rises the observing-room, which is also circular, the interior being 34 ft. in diameter, and 23 ft. in height, lighted by eight large plate-glass windows. Near the observatory there is a large workshop and laboratory, in which the reflector and some of the more delicate parts of the apparatus are now being made under Sir Henry's personal supervision, while the large axis and tube of the telescope, as well as several of the other massive parts, have been executed by the Messrs. Galloway.

The telescope tube consists of several open-framed circular castings, very carefully and beautifully moulded, the end flanges of which are all accurately turned and fitted together. The centre part of the tube is provided with hollow trunnions, on which it moves, and in one of which the eye-piece of the telescope slides, so that in all possible positions of the instrument the eye-piece remains in the same spot. The necessity of applying motive-power to effect all the motions of the instrument will be understood when we state that the moving parts of the telescope weigh between eleven and twelve tons, and by their solidity and inertia give a degree of steadiness so generally absent, but so very necessary, in all large telescopes. Sir Henry first conceived the idea of constructing a special kind of lathe, for the purpose of cutting, with a diamond cutting tool, the slight spherical concavity of the massive plate of glass, which forms the reflector, and which is 50½ in. in diameter. For this purpose, he designed a lathe having beds 50 ft. in length, carrying a massive radius-bar for describing the curved path of the diamond cutter, so as to give the precise focal length required. There is also another important machine designed by him for grinding and polishing the glass surface to an absolutely true spherical curve, after which it must be converted into a parabola of revolution, without which it would be absolutely useless. Some idea may be formed of the delicacy and difficulty of this operation when it is stated that the curved glass surface, which is 50½ in. in diameter (3 in. in excess of the largest ever made), must have this surface reduced at the edges only one 13-1000th of an inch, and gradually lessening by the law of the parabolic curve, until the reduction in the centre is *nil*. This operation of parabolising the reflector is so extremely difficult that a true curve is rarely if ever attained; hence the price quoted by the trade for a glass parabolic reflector of 4 ft. in diameter is no less than 2,000*l.* Should Sir Henry's plans be as successful in this, as in the turning of the glass to shape with a diamond, a perfect glass reflector will not cost as many shillings as it at present costs pounds, and what is of still greater importance, his system of mounting comparatively thin plate-glass on a marble backing holds out the prospect of our future telescopes being made at least four times as large as the one he is now making.

UTILITY AND BEAUTY.

Sir,—The relation of these two qualities is amongst the most subtle that æsthetics has to discuss. No wonder, then, that the artisan is bewildered by the dicta of amateurs, who make confusion worse confounded by their imperfect comprehension of principles. Why should public men be permitted a liberty with regard to the fine arts that would not be tolerated in them with respect to any other profession? Would they dare to stump on medicine, engineering, &c.? The theory of the fine arts is the most difficult of all the sciences to enunciate, and for this reason it still remains in a chaotic state. Even professional artists as yet find it difficult on many points to give a reason for the faith that is in them. The whole field of art discussion is laid waste by a terrific invasion of nonsense. In a recent review in your columns of Mr. Poynter's Lectures upon Art, the writer appears to have an *aperçu* of the real relation of "Utility to Beauty." The first wholesale blunder that amateurs generally stumble upon is that everything in nature must necessarily be beautiful. That the entire purpose of the Almighty in creation was to make everything beautiful. It is the human conceit that everything was made to please man. Upon this point the late Sir John Herschel once wrote to me. "The Creator had other purposes in creation to subserve than that of beauty." Our everyday experience must convince us of this. All being is fitted to its purpose, but only some is beautiful. Indeed, we should not recognise the beautiful, or take a delight in it if it were not for contrariety.

We see, then, that the grand motive of nature is fitness, but if all things are fit and only some are beautiful, it must be clear that fitness alone is not the cause of beauty, but that the beautiful must inhere in that which, beside being fit, has some appositeness, some *rapport*, with our own nature. The beautiful, then, inheres in those combinations of forms, colours, &c., which are in accord with our sensuous constitution. If we fit a thing rigorously to its purpose, and independently of any attempt to reconcile it to our own nature, as great creating Nature does, it may turn out to be beautiful or it may not. But, at all events, if we steadfastly adopt this principle, it will have the satisfactory quality of nature's works, fitness. And that is the motive which, with all due deference to Mr. Gladstone, we would inculcate as that which should animate the English workman; for it is almost invariably in the attempt to overlay fitness with ornament out of all proportion to it, that vulgarity and bad taste result. Good taste consists in knowing to what extent we may modify things which are not beautiful as well as fit, so as to recommend them to the human nature. Therein lies the difficulty, for in this case we have to overlay or engraft upon the "useful" something which does not essentially belong to it, in order to satisfy tastes, and which, to all intents and purposes, is in respect to its purpose of utility *appliqué*, a mere sham. This beautification of the useful had better, then, be left to the artist-workman, whilst the main object of the general workman should be utility, rigorous utility.

The beautiful, however, may be considered apart, in the abstract, without any considerations with respect to utility except the one purpose of conforming forms, colours, &c., to our own sensuous nature. A beautiful object may subserve no other purpose than the gratification of our taste. But this is the domain of purely art considerations, wherein there is a large field to be worked by the artist-workman, who is the proper person to gild the useful with the beautiful when it is required of him.

"When it is required of him,"—for with what show of reason can we insist upon the artisan cultivating his taste if there be not a demand for it? Is it that our art-manufactures may be more saleable abroad than at home? Grecian art was not developed by art-schools, and by beginning from the artisan. The taste originated with the powerful and rich. The demand for art and the art-manufactures came from the

powerful and wealthy Greeks, and the artist and artist-workman arose to meet that demand. No other mechanism than this will ever correct England's deficiency in taste. To expect it is as unreasonable as to expect the play of "Hamlet" to be successful with the part of *Hamlet* left out.

W. Cave Thomas.

LIGHT PORTABLE RAILWAYS.

Sir,—A few days ago I was in the Erewash Valley on business, and was invited to see a piece of light portable railway laid down and worked at the manufactory of Mr. G. R. Turner, Vulcan Iron Works, Langley Mill, near Nottingham. I made notes of the plant and of the work done, which may be of interest to many of your readers.

The railway consisted of 10 lb. to the yard flat-bottomed steel rails, laid to a gauge of 18 in. Two light plates of steel, bolted together, form the sleepers. The lower plate passes underneath the rails, and grasps the outside of the flanges, while the upper plate, which is now bolted to the lower one, grips the top of the flanges, and also keeps the pair of rails extended to the true gauge. The rails so laid lie firmly on the ground, and the trucks run as freely over them as if they were of the most permanent character.

The length of the single line of rails laid down was 56 yards, and in this length there were two curves, one of 11 ft. radius, and one of 10 ft. radius. Two men laid the rails in fifteen minutes.

The truck used had a cast-iron frame, 2 ft. 2 in. by 2 ft. 2 in. The wheels were 9 in. in diameter, and of cast iron, fixed on 1¼-in. wrought-iron axles. The axle-boxes of the two pairs of wheels are simple and effective. A top brass in each receives the weight of the work, and the axle-bearings are lubricated by oil, obtained from cotton-waste, held in a cup beneath the bearings. The waste furnished a regular supply of the lubricant. The cup can be readily replenished with oil, as it is fitted for removal, and when it is replaced it is held in its position by an outer slide of U-shape, that keeps out dust and dirt. Upon the cast-iron frame the truck-box is planted on a central pin of ample strength, and is fixed in position by a set bolt, which, on being eased, allows the truck to travel all round. The truck-box is of sheet steel, and is 34½ in. by 31½ in. at top and 30 in. by 26 in. at bottom, by 16½ in. deep. It has self-acting tipping-gear. A lever is jerked aside, the box tips over and empties itself, readily comes to its seat again, and locks itself there, ready for another load.

On the front of the wagon-frame is a steel bow or buffer spring, upon which a self-acting coupling is placed. As soon as two trucks come in contact the coupling gear locks itself.

A man commenced to load the truck. He cut grass sods from a well-trodden spot down into clayey soil and filled the truck. After heaping his load, he pushed the truck away to the end of the rails, and, striking the tipping lever with his hand, the truck canted over, emptied itself, and was back to its place in less time than I take to note the fact. Back he goes with the empty truck, re-fills it, and continues to repeat the work. He conveys over the 56 yards of railway twelve loads an hour; each load weighs about 6 cwt. One load was brought to the scales, and the net weight of earth was 5 cwt. 3 qrs. 8 lb. The work done by this factory labourer, in one hour, upon the portable railway by the handy truck which I have described may be summarised thus. He cuts and lifts 3½ tons of earthwork, conveys that weight, in twelve loads, over 672 yards of rail, unloads twelve times, and brings the empty wagon over 672 yards, making a total of ground covered of 1,364 yards. At this rate, the work done in a day of ten hours will be equal to the lifting of 35 tons of earth by one man, who conveys that weight 56 yards and deposits it.

This is fifty per cent. more work than can be done by a man with wheelbarrow and plank road. A strong London coal-wheeler fills a barrow with 3½ cwt. of coal, and conveys the load 30 yards. In a day of ten hours he carries 24 tons, for which he is paid 3d. per ton. He thus earns, by vigorous piecework, six shillings per day. But with light steel rails and one of these trucks he could do one-half more work, and earn nine shillings per day, with no more expenditure of physical labour than he gives to the barrow and plank for six shillings only. And the plant to do this effective work, say 100 yards of rail and truck inclusive, will not cost 25*l*.

A strong, but lighter description of truck, suitable for exportation and conveyance overland, is made at the same works.

I saw also a light portable railway carriage, similar to an Irish jaunting-car roofed over, but with open sides. This is a very suitable vehicle for light tramways, and the day is not distant when the turnpike roads of this country will be utilised for tram-car travelling such as this, and for the conveyance of goods on light trucks, drawn by light, noiseless, and nearly smokeless locomotives. By such means passengers can be carried at a halfpenny per mile, and goods at a penny per mile.

Libra.

THE HOME OF THE FUTURE.

"As the home, so the people."
George Godwin.

Houses are built in various ways,
For people to dwell therein,
But few are plann'd deserving of praise,
Below, around, or within.
What is a dwelling? one may well ask,
In seeing the time has come
When men have need to essay the task
Of building a healthy home.

Houses are many, but homes are few,
Despite of the country's wealth,
And dwellings are legion, old and new,
But they are not homes of health.
Art and science may raise a pile
As grand as St. Peter's dome,
But rich and poor may all the while
Possess neither health nor home.

A home should not be a human trap,
But nursery pure; in sooth,
Plann'd that the morals we may not sap
Of the child or tender youth.
Give plenty of water, space, and air,
And vice you will overcome;
For cleanliness will be godliness where
There exists a healthy home.

Architect, builder, and workman too,
A noble mission is thine,
If each your duty will dare to do,
For health and for good design.
The credit of one, the honour of all,
Is pledged for the time to come;
Build well, and your works, strong as Roman wall,
Will live in each heart and home.

C. Clinton Hoey.

SOMERSETSHIRE ARCHÆOLOGICAL SOCIETY.

The annual meeting of this society was held in Taunton on the 7th inst., in connexion with the visit of the Royal Archæological Institute. The Rev. Canon Meade presided.

The report (presented by the Rev. W. Hunt and Mr. C. J. Turner, joint hon. secs.) stated that the society continues to meet with no less welcome and support than in past years, and that the number of its members has somewhat increased since the last report was presented. Some valued members have been lost by death during the past year. Among these has been Sir Walter Trevelyan, bart., who was the first president of the society, and delivered the opening address at its first meeting, in 1849. He was a warm friend and liberal supporter, and has recorded in his will his unabated interest in the welfare of the society by a donation of 100*l*. The death of Mr. Richard Walter, of South Petherton, one of the local secretaries, is also noticed with regret. The council regret to observe that the finances are scarcely in a satisfactory state, and the society has, in consequence, been unable to grant any pecuniary assistance to works which it would otherwise have gladly furthered, such as the excavations at Wedmore and the exploration of Pen-pits. The Council propose to call a meeting, in accordance with rule 16, to obtain the sanction of the society for certain changes, and for the necessary alteration of rule 11 which these will entail if accepted. The Council feel that it is unadvisable that any further changes should be made in, or work done to, the fabric of Taunton Castle, without a plan being drawn up, by some competent architect, of all the changes which appear necessary to make it meet the requirements of the society, with due regard to the great and important trust which the possession of such a building entails. "In order to avoid a patchwork treatment of the castle, and to ensure that whatever may be done, either for use or beauty, may be a cause of pride, and not of shame and annoyance, it seems advisable to employ an architect, and to work by such degrees as we can in accordance with his directions. The Council therefore recommend that Mr. E. Ferrey be appointed architect of the society; that he be requested to draw up a plan for the castle alterations; that he be paid for this and such work as he may do from time to time for the society from the Castle Restoration Fund; and that a small sub-committee be appointed in place of the re-construction committee to assist and control his work, consisting of Messrs. G. T. Clark, W. A. Sanford, Surtees, Gale, and Sloper; and that no change be made in the castle except in accordance with his plan and under his direction as architect."

The Council re-appointed Canon Meade (president) as chairman, Rev. T. W. Wilkinson as secretary, and Bishop Clifford, Revs. H. Winwood, J. A. Bennett, Geo. Smith, and W. Long, Messrs. Bennett and W. Wills, as members of the Pen-pits Exploration Committee.

The catalogue of the Museum, drawn up by the curator, Mr. Bidgood, has been published, and the Council acknowledged the great industry, ability, and care which he has shown in this work.

ARCHÆOLOGICAL DISCOVERIES.

Northampton.—A valuable collection of old Roman coins has just been recovered by the county police, and is now in the possession of the chief constable for the purpose of being handed over to the Treasury. It seems that, on the 10th ult., a man was at plough in a field called the Start, at Southwick, in the occupation of a tenant on the Earl of Westmoreland's estate, when he turned up an earthen jar, which broke in pieces, disclosing no less than ninety-one silver coins. Of these he gave sixty-one to his employer, and distributed the rest. The policeman stationed there collected them, and there have been identified coins of Vespasian, Hadrian, Nerva, and Antoninus. Endeavours are being made by the hon. secretary to the museum (Mr. J. B. Hensman) to secure the collection for the town, and the Secretary of State has been written to.

Exeter.—At the annual meeting of the Devonshire Association for the Advancement of Science, Literature, and Art, held at Ilfracombe on the 30th ult., Mr. E. Parfitt read a paper on "Archæological Discoveries in Exeter in 1878-79." He said he found very great difficulty in impressing on the workmen at Exeter the importance of preserving specimens of pottery. They looked upon them as so many shards, and nothing more. Exeter had been one of the richest mines of wealth in that way of any city of its size in the kingdom; but had it not been for the indefatigable exertions of Captain Short in collecting and recording his collections, they would be poor indeed. Mr. Harry Hems had placed in his hands a small collection of Roman pottery, which he had picked up at various times in the city. The first was the base of a sepulchral urn of coarse ware, found at Mr. Salter's, Gandy-street. The name of the potter was Paullus, but it was reversed on the urn. Another was a small vessel of red Samian, quite plain, except a string line round the middle outside. In an excavation made in Musgrave's-alley, for some new buildings erected by Mr. J. T. Tucker, fragments of pottery and coins and tokens of different dates were found. The oldest, and perhaps the best of that find, was a vase-like vessel, very thin and light, nearly as thin as biscuit china. It measures 4½ inches in height, and 3½ in its widest part. It bulged out in the middle, and on that part were a number of elliptical depressions placed vertically. That kind of vase was very rare. In a field at the back of the Artillery Barracks, Topsham-road, in making a drain for draining the camp-ground for the Militia, one of the workmen came across what he believed to be a very rare coin, a quarter noble of the reign of King Richard II. A very interesting relic was found in Bartholomew-street in excavating for a sewer drain this year. It was a tradesman's mark, made of lead, about 2 in. in diameter. It was round, and was cast with the name of the tradesman on it, viz., Clavo Passavante. Those circular pieces were the trade-marks of the day, and it was compulsory with all workers in cloth to affix to each

piece a distinctive mark, then a seal of lead, serving as a token or mark of the length or quality of the cloth proffered for sale. That was an enactment anterior to 1446.

Dale Abbey.—The excavations at Dale Abbey have ceased for want of funds. It has been ascertained that the cloister alley was 10 ft. wide, and roofed with red tiles. That part of the nave which is within the enclosure has been cleared, resulting in the discovery of a very considerable portion of the original tile pavement, which appears to have been laid in bands of different widths.

Surrey.—While engaged in making excavations on the property of Mr. Richard Twining, near Tooting, for the foundations of a new building, some workmen struck a brittle substance at a depth of about 20 ft. On an examination being made, some Roman and Etruscan ware was unearthed, and the following articles found:—A quantity of glass, with etching in gold, representing two figures of the early Christian age; some specimens of glass vases of great iridescence; a Roman glass bowl, broken in fifteen pieces, in white, yellow, blue, ruby, and other colours; a vase of antique Roman manufacture, in four pieces; a lance, battle-axe, and dagger, also some bronze weapons in fragments, and a silver cup, the whole of these being fused together apparently by fire. Alongside these treasures was found a large square copper box, the lid lying next the articles named, and the other portion broken in halves, the treasures having evidently been once inclosed in it.

BOROUGH SURVEYORS.

Sir,—The recent appointment of a *local builder and contractor* as surveyor to a Local Board is one which deserves the attention of the public as well as that of engineers and borough surveyors; for there can be little doubt that the former are much interested in the appointment of properly-qualified professional men to carry out and maintain sanitary works and public improvements affecting the health and comfort of the populations. I think if we inquire into the necessary qualifications of a borough surveyor we shall at once see that no one is fit for the appointment who has not received a special training.

The necessary qualifications are:—

1. He should be thoroughly acquainted with the whole of the Public Health and Highway Acts.

2. He should be capable of designing and carrying out in a scientific and practical manner works of sewerage and drainage and water supply in all their details, and have a thorough knowledge of the various kinds of engines for raising sewage and water. To the above should be added a knowledge of gas-works and of electric lighting.

3. He should be capable of designing and maintaining *high-class roads and streets*, including, of course, a thorough knowledge of the various applications of wood, stone, concrete, and natural and artificial asphaltes to produce such roads.

4. He should have a practical and *scientific* knowledge of building construction.

5. He should have a fair knowledge of architecture.

6. He should be an accurate surveyor with the chain and theodolite, and an accurate leveller.

7. He should be a good draughtsman, and capable of preparing specifications and taking out quantities.

8. He should have a good knowledge of the value of labour and materials, and be able to keep accounts.

Now, sir, for a man to be capable of carrying out the works above mentioned in a proper manner, he must have had at least four kinds of training, viz.:—

A. A preliminary scientific training embracing at least the following subjects:—1. Arithmetic, Euclid, mensuration, practical geometry, algebra, plain and spherical trigonometry, conic sections, and the differential and integral calculus; 2. Mechanics, hydraulics, hydrostatics, pneumatics, and acoustics. 3. Light, heat, electricity, and magnetism. 4. Elements of chemistry and magnetism.

B. Office training, including the drawing of plans neatly, accurately, and expeditiously; architectural design and scientific construction; the preparation of specifications, taking out quantities, and the other usual office-routine work.

C. Town, land, and engineering surveying and levelling.

D. Practical training,—including setting out and measuring up works, superintendence of works, and so gaining a practical knowledge of materials, construction, and workmen.

In order to insure a competitor having such a knowledge as above mentioned, the following should be required:—

1. That he should have been articled for four years to a civil engineer or a borough surveyor, or have received a four years' training in the engineering department of one of our universities, or at Cooper's-hill College, which should be thrown open for the training of engineers generally. That previously to being articled he should pass a preliminary scientific examination, and on the completion of his articles or college course he should be examined in the subjects of classes A, B, and C.

2. He should serve four years as an assistant, so as to acquire the subjects in class C, and at the end of that term should be examined in the subjects of that class, and if successful in passing such examination should then be considered qualified to enter into competition for any borough engineer's or surveyor's appointment that might be vacant. Corporations and local boards would then have some protection from "quacks," and a guarantee to some extent of the qualifications of all competitors. It would then be for them to make the selection of the man who had had most experience, or who was most suitable in other respects for their purpose.

I suggest that the Board of Examiners should be the chiefs of the engineering, legal, and medical departments of the Local Government Board; a member of the Council of the Institution of Civil Engineers; a member of the Council of the Royal Institute of British Architects; a Professor of Mathematics and Physical Science.

I think if the Local Government Board insisted upon all borough and town surveyors (I would call them engineers) of towns having a population of 10,000 and upwards being so qualified, it would do very much to ensure the carrying out of sanitary and improvement works in a proper manner, and thus promote the health and comfort, and therefore the happiness and prosperity, of the people. Progress.

Sir,—As one of the candidates for the surveyorship of Enfield, and also for others decided in a somewhat similar manner, I have come to the conclusion that until it is made *illegal* for persons not duly qualified by (1) a term of pupilage, (2) a term of practice, and (3) an examination in scientific and professional subjects, to act either as surveyors or civil engineers, such evils will continue and increase.

The time may come when Government lending money to local boards may insist upon such boards having competent and educated officers to see it is spent properly; but before then it is surely time for the profession to do something to prevent every one who pleases calling himself and acting as a civil engineer. Justice.

As suggesting a curious and sadly instructive contrast between what seems desirable and what actually is, we print *verbatim* a letter on the same subject received from a perfectly well-intentioned candidate for the Enfield surveyorship, who writes thoroughly in earnest, and sends his name and address:—

Enfeild Local Board Surveyorship.

Sir,—I am realy don't no what C. E means by is professional men. in Last week builder, & "Not a Candidate" & C S C in this Weeks *Builder* they Seam greatly Put about with a Builder & Contractor been elected. Now I whould ask them Professional Men whow is More fit for the Situation of Surveyor. then a good Practical Builder if he as had Practial expereince in all that the Local Board requires. Now I carnt blame the Local Board for electeng Builder & contractor if he is But thire is Contractor that Now no More about what is required of a Surveyor nor the Man in the Moon & they have to Imploy Foreman to carry the works on for them & thire is some what call themself Professional Men quite as bad that dont now good Stone from Bad & good work from bad nor yet Price of either Labor nor nothing els the only thing is theys can Draw a good sett of Plans &c and as to get thire Practial Nolige from the Best of work me now I dont Blame the Local board for Nothing only Paying such Large Salarys as the Do for I was a candidate and whould of been glad of the Situation at a Salary of £150 & I conseder myself Second to no professional for I can booth Do thire work a a Surveyor & is Practial in every thing that is required & as had above 20 years expeirsince in Warter Works. Sewarge Works. gas Warok. Street and rood Making flaging. Paving &c: & understands Boath cost of Labor, Meeteral, & can understond wither it is good or Bad at once where for Professional Men as to advetice for Tenders before can inform the Board what it will cost and if some of the Local Board had to Pay the Salarys out of thire own Packet they whould not be so fond of Paying Such Large Salarys when they chould get good Practical Men at Much Les. A Candidates.

THE NEW CLAYTON HOSPITAL, WAKEFIELD.

This building externally is Flemish in character; the total length of the main front is 287 ft., with a central tower 70 ft. in height. The hospital is planned on the pavilion system, with accident and special wards, operating-theatre, day-rooms, and offices. The administrative department is placed in the centre of the building, with the kitchens, &c., at the rear. The mortuary and laundry are situated at the south side of the site. The staff entrance, under the tower, is approached from the new road on the north; the entrance for accidents is from Northgate. The porters' rooms are placed on the south side of the entrance; the outdoor patients' entrance is from the new street at the rear of the site, and communicates with a spacious waiting-hall, and with the dispensary department. The hospital, in the first instance, is constructed to accommodate fifty-two patients, with provision for future extension. The walls of the building are, externally, faced with Elland edge wall stones and ashlar dressings from the quarries near Huddersfield, and lined with brick. The vitiated air is to be extracted by means of air-shafts connected with the copper cylinders which are placed in the roof and fitted with rings of gas-jets, the exit-shaft being carried into the ventilators provided for them. The hospital has been designed by Mr. W. Bakewell, of Leeds, and carried out under his superintendence. The contractors are Messrs. Pickersgill, Craven & Lloyd, Rawsthorne, Stafford, Tattersall, and Rayner. The corridors and other portions of the building are warmed by Messrs. Galli & Co., of Leeds, who have fixed the electric bells and speaking-tubes; Messrs. Shillito & Harrison have carried out the boundary railings and gates; and the gardens have been carried out by Mr. W. L. Skinner, of Silcoates. The total cost of the building and fittings will be about 20,000*l.*

ARCHITECTS AND THE BETHNAL-GREEN BOARD OF GUARDIANS.

We have already mentioned that this Board decided to engage an architect in reference to the new buildings they purpose to erect at Leytonstone in place of the iron temporary sheds that have been in use for some years past. It was proposed that Messrs. A. & C. Harston be engaged, but on its transpiring that their charge was five per cent., the chairman expressed an opinion that others might be found who would carry out the work much cheaper. It was resolved to write to a number of architects, and the clerk at the last meeting proceeded to open letters from them on the subject. They were as follow:—Messrs. Knightley, 5 per cent. on the outlay, and offering to dispense with the clerk of the works; Blashill, 5 per cent.; Saxon Snell, 5 per cent.; Hill & Fletcher, 5 per cent.; Harston, 5 per cent.; Lee & Smith, 5 per cent.; Stone, 5 per cent.; Jackson, 5 per cent. on the first 1,000*l.*, and 3½ per cent. afterwards; Ingram, 2½ per cent.; Wilson & Aldwinckle, 2½ per cent. This firm offered to submit designs in competition with other architects. After some discussion, the several names were read, and, after being reduced to three, the votes were respectively:—Harston, 12; Knightley, 7; Wilson & Co., 8; on the first voting. The second showed Harston, 11; Knightley, 1; Wilson & Co., 10; and the final resting alone with Messrs. Harston and Wilson & Co., decided the former to be chosen, 13 votes being recorded for Messrs. Harston and 9 for Messrs. Wilson & Aldwinckle.

ARCHITECTS' CERTIFICATES: IMPORTANT JUDGMENT.

CLEMENCE *v.* CLARKE.

In this case, tried in the Common Pleas Division before Lord Coleridge and a special jury, the plaintiff, a builder, sued the defendant, a seed-merchant in King-street, Covent-garden, for the balance of amount of contract and of extras, for a building in the neighbourhood of Covent-garden. The circumstances are somewhat involved, but we will endeavour, with the shorthand writer's report of the arguments of counsel before us, to state briefly the main point in question.

Mr. R. E. Webster and Mr. E. Pollock appeared for the plaintiff, and Mr. W. G. Harrison and Mr. Crispe for the defendant.

In the first instance, Mr. Cross, surveyor to the Duke of Bedford, prepared the plans for Mr. Clarke, and afterwards, in conjunction with Mr. Waghorn, surveyor, took out the quantities. The first tenders provided for too great an expenditure, but a revised tender by Mr. Clemence (6,975*l.*) was accepted. Mr. Clemence's tender was to execute the works "according to drawings and specification signed by me, and general conditions of contract, and revised Bills of Quantities."

The priced bills of quantities were sealed up and made part of the contract, and were to regulate the charges for any extra work done. For good reasons Mr. Cross ceased to act as Mr. Clarke's architect, Mr. C. F. Hayward taking that position, and under this gentleman the works were carried out.

The contract was "in accordance with the agreement between the Royal Institute of British Architects and the Builders' Society, and adopted by the Central Association of the Master Builders of London." It contained, amongst other clauses, the following:—

"The contractor is not to vary or deviate from the drawings or specification, or execute any extra work of any kind whatsoever, unless the same be required to comply with any of the provisions of any of the Acts of Parliament, regulations, or bye-laws hereinbefore mentioned, or unless upon the authority of the Architect, to be sufficiently shown by any order in writing or by any plan or drawing expressly given and signed or initialled by him as an extra or variation, or by any subsequently-written approval signed or initialled by him."

It contained also this clause (18), upon the exact meaning of which the whole question turned:—

"A certificate of the Architect, or an award of the Referee hereinafter referred to, as the case may be, showing the final balance due or payable to the Contractors, is to be conclusive evidence of the works having been duly completed, and that the Contractors are entitled to receive payment of the final balance, but without prejudice to the liability of the Contractors under the provisions of Clause No. 11."*

Mr. Clemence received money under certificates as the work went on, Messrs. Cross and Waghorn, the quantity surveyors, measuring what was done, and ultimately Mr. Clemence received the final certificate from Mr. Hayward, including the extra works, in these words:—"I hereby certify that Mr. John Clemence, builder, of 32, Villiers-street, Strand, is entitled to receive the sum of 585*l.* 12*s.* 10*d.*, the balance account of works as certified by the measuring surveyors to be the final amount due thereon executed by him at warehouses at Hart-street, Covent-garden."

There had been a previous certificate for 1,500*l.*, not paid, which contained no reference to the measuring surveyors.

On the part of the defendant it was contended that the final certificate was a bad certificate, because the architect's judgment alone should have determined the matter; and, secondly, that written orders had not been given for the extra works. Mr. Harrison urged that the certificate of the completion of the work would not do if there were no orders in writing such as had been stipulated for.

Lord Coleridge did not agree in this, and ruled that, although an architect might not have done what he was bound to do, the certificate was conclusive evidence that the work had been ordered, and conclusive evidence that the contractor is entitled to receive payment of his final balance. The Judge added, If your architect has not done what he should have done, you have your remedy against him.

Judgment for the plaintiff for 2,085*l.* 12*s.* 10*d.*, with 71*l.* 18*s.* amount of interest from the date of the writ.

* Clause 11 says:—"Any defects, shrinkage, and other faults which may appear within —— months from the completion of the building, and arising out of defective or improper materials or workmanship, are, upon the direction of the Architect, to be amended and made good by the Contractors at their own cost, unless the Architect shall decide that they ought to be paid for the same, and, in case of default, the employer may recover from the Contractors the cost of making good the works."

BUILDERS IN EDMONTON.

EDMONTON LOCAL BOARD *v.* BROWN.

On Monday last, Edmonton Police-court was filled with members of the building trade, when this case, once before heard, was called on.

The Chairman (Mr. Abbiss) asked whether Mr. Glyn (for the defendant) intended offering any fresh evidence; to which the learned counsel replied that as the magistrates had inspected the premises in question, and had had pointed out to them the parts in respect of which the summonses had been taken, he was unable to conclude what their opinion on the matter was; but, if they wished, they could hear from the surveyors who were in court that the houses were so far properly built, and that the material used was good material. In addition to which he had a letter from the freeholder, which, although not strictly evidence, was to the effect that he had never had to complain of the way in which the houses were being built, that a surveyor was employed to see that the work was properly carried out on the Langhedge estate, and that he had asked the surveyor to the Local Board on more than one occasion to inspect the houses in question and see that they were being properly built, but without avail, the surveyor not even sending a reply.

The Chairman observed that he and Mr. Doe were the magistrates who visited the defendant's buildings, and he might say that they were not in favour of an entire acquittal. They had given the matter every possible consideration, their only object being to see justice done, so far as they could, between man and man. He might, however, at once say that the case was a very different one from those from Tottenham. There was no doubt that what was used at Tottenham for mortar was material of the most inferior kind, and unfit to be used even in the construction of a pig-stye. In the present instance he was free to admit that the mortar used in the habitable parts of the houses was fairly good; but that used in some of the back premises was not fairly good mortar, although it was nothing like so bad as that produced at the court from Tottenham a few weeks ago. But the additional expense of making the present mortar good would have been so small that he was surprised that a builder should have thought it worth his while to deprive his houses of their character, and endanger the health of persons who might occupy them. He was of opinion that the mortar used would not have passed any surveyor, although no objection had been made previously to the summonses being taken out. In the Tottenham cases the Bench marked their sense of the badness of the mortar used by inflicting the largest penalty that the law allowed. In the present instance they believed the Local Board had done quite right in causing the summonses to be taken out, and that the builder was not justified in doing his work in such a slovenly manner. Therefore, while on the one hand they wished it to be distinctly understood that Mr. Brown had constructed his buildings in a much more satisfactory manner than the builders from the adjoining parish who had been convicted; on the other hand, they wished it to be equally understood that they could not see how such an infringement as Mr. Brown had committed could be justified. They had no desire to impose fines merely for the satisfaction of Local Boards, but in the present case they felt there ought to be a conviction, but at the same time thought that under all the circumstances a fine of 1*l.* each on six of the summonses would meet the case; while the two summonses in respect of houses the back additions of which were not yet erected, would be dismissed. The only costs allowed were for the six summonses, amounting to 6*s.*

REFUSE DISPOSAL AT NOTTINGHAM.

Not more than twelve years ago there was no public provision for scavenging the streets and for removing the refuse of Nottingham. The inhabitants had to see to those things so far as they were able, and in the poorer neighbourhoods they were fearfully neglected. As a consequence flagrant nuisances, from which sprang foul diseases, existed in various parts of the town. At length the matter was taken in hand by the Health Committee, and wharfs for the reception of the refuse were established, one in Poplar and the other on the canal side, both in densely-populated quarters of the town. These were maintained for about three years, but as (according to the *Nottingham Journal*) the contractors did not observe all the conditions imposed upon them, the committee again had to deal with the matter. A new wharf was accordingly purchased on the Leen-side, but with the increased spread of the town in this locality it was ultimately discovered that this arrangement, like the other, was anything but a good one, and about three years ago the corporation commenced to erect a sanitary wharf on a large scale in the Eastcroft, on land which belonged to them. This wharf, or rather set of buildings, is now used for the sanitary purposes of the town. The works consist of a basin 325 ft. long and 35 ft. wide for loading and unloading boats; and the shed adjoining same for washing tubs, &c., is 140 ft. long and 50 ft. span. Another shed, the same size, is constructed over a portion of the basin and adjoining the last mentioned, so that the work can be carried on entirely under cover. At the east end of the basin is a repairing dock, 80 ft. by 20 ft., for executing repairs to the boats engaged in carrying manure. Screens or sieves are fixed overhanging the basin, so that the refuse, when brought to the wharf, can be screened so as to keep out bricks, pots, and other rubbish. The sheds are constructed almost entirely of ironwork, with slated roofs, and are lofty and well lighted. The cart-sheds, to accommodate the carts and drays belonging to the Health Committee, are each 140 ft. long and 30 ft. broad, and are constructed of ironwork, the roofs being boarded and slated. The stables are built in the shape of a quadrangle, 180 ft. by 140 ft., and contain altogether accommodation for fifty-two horses. The building is two stories in height, and the room over stables is used for hay and corn stores, and also contains the cutting and crushing machines for preparing the food for the horses. At the western entrance to the courtyard of the stables is a tower containing a large cast-iron water-tank, which is placed high enough to supply the buildings with water. This tank when full will contain about 12,000 gallons of water, and the supply will be pumped into the tank from a well which has been sunk to a depth of over 70 ft. At the north-west corner of the road leading down to the works are situated the offices and superintendent's house, and in connexion with the former are two weigh-bridges. The whole area occupied by these buildings was originally 6 ft. below flood level, and the land has been raised to that extent, thus increasing the cost of the works considerably. The total cost of the works will be about 25,000*l.* The works have been designed by Mr. M. O. Tarbotton, engineer to the Corporation, and have been carried out under the immediate superintendence of Mr. A. Brown, the assistant borough engineer. From 1,400 to 1,500 cart-loads of refuse, including the contents of ashpits and pail-closets, are brought to the depôt every week, and a great portion of it is sold to farmers at the rate of 3*s.* 6*d.* or 4*s.* per ton. The borough contains upwards of 10,000 pail-closets, each of which is changed at least once a week. The Committee report that these closets answer well.

OUR SUBURBAN BUILDINGS.—THE LATEST NOVELTY.

I am an old-fashioned individual, and was taught the art of building quite a quarter of a century ago. Of late years I have been dubbed by some of my friends as "antiquated" and out of date in my notions of building construction, &c.; it is therefore with feelings of diffidence that I venture to trespass on your kind indulgence, and solicit a corner of your valuable journal to air the subject of my communication.

It is not, I hope, in my nature to carp like a "too captious critic" at the efforts of a class of builders to "level up" to the increasing demands of an enlightened public; but I am disposed to raise strong objection when I find the said public treated as fools from the point of view of the "Jerry builder."

The chapter of accidents has of late brought me into better and soberer acquaintance with some of these speculative gentlemen than I had ever thought would have fallen to my lot to experience, and I have had some opportunities afforded me to become more enlightened in this class of building than formerly. I would be just, I would not condemn wholesale because the many may deserve condemnation, and I would have you, sir, believe that there are many men of the speculative class who are thoroughly respectable in themselves, who are honest, and who do fairly honest work, as things go.

"The latest novelty" then, sir, would appear to be the new damp-proof course, which is doing duty at the present time in some new houses in a nice suburb, which may be nameless, and the enterprising builder has inserted it so as to project well beyond the outer face of the brickwork that it may be seen and appreciated. These houses, I believe, when finished are to be sold at about 800*l.* a-piece. I have peeled off a piece of this damp-proof course that I may be sure I am not mistaken. It appears to me to be worthless, and to consist simply of ragged and worn out "Croggon's" roofing felt, which commonly is placed, when new, under the slates of the better class of houses as a bedding. No doubt, sooner or later, if we could follow the advertisement sheets, we should read that such and such houses will be sold or be let, replete with every convenience, hot and cold supplies, bath, and the brick walls damp-proofed at ground level.

Another house I looked into I thought rather conveniently planned. I opened a door in a recess of one of the back rooms which appeared

to me to be intended for a larder or pantry, as the shelves were of slate, and I thought the arrangement not bad, when, lo and behold! at the ceiling level the plumber had skilfully managed to insert the D-trap of the mezzanine w.c. immediately above, so that it should project well below the ceiling of the assumed larder or pantry, and be seen. N.

THE DOUBLE OWNERSHIP, ARUNDEL CHURCH.

Sir,—In your account of the Archæological Institute's late meeting, you report Dr. Freeman as saying, at Dunster, that Lord Coleridge had recently decided that there were two churches at Arundel, as there undoubtedly are at Dunster.

I can hardly think that Dr. Freeman is correctly reported by you in this version of Lord Coleridge's judgment. For certain reasons of my own, I employed a very efficient shorthand writer to take down the judgment. Now, I cannot find in it anything to justify Dr. Freeman's account.

Lord Coleridge's expressions were as follow:—"I am of opinion that the church spoken of in these documents is the whole parish church of St. Nicolas, Arundel, including what is now used by the parish, and what is claimed by the Duke of Norfolk."

Again, "At, and soon after, the foundation of the college, I do not at all doubt that if it had been asked what was the parish church of Arundel, the present church of St. Nicolas, in its architectural integrity, would have been pointed out; and if it had been asked what was the church of the College of the Holy Trinity of Arundel, the questioner would have been shown the very same building in its architectural integrity."

Again,—"It appears to me that in 1511 the whole building was commonly spoken of as one church."

And further on,—"The church, of which the advowson was in the college, the freehold of which and of the churchyard was in them, and the whole *undivided* church of St. Nicolas, Arundel, in which the college and the parish had the respective rights, which I have already indicated."

Dunster and Arundel cannot be compared. Dunster was monastic and parochial; Arundel was collegiate and parochial; Dunster had a chancel, with an altar and a rood-screen taken out of its nave, and a solid dividing wall; Arundel had a pure and simple nave, adapted for a congregation, and remarkably open to the chancel by a transparent iron screen.

It is surprising that these two churches should have been considered as having any special resemblance. Thomas Darling.

THE LONDON SCHOOL BOARD SCHOOLS.

Sir,—There can be no doubt that the cost of many of these buildings has become outrageous, and Mr. Aldwinckle is perfectly justified in the observations he addressed to you on the matter in his recent letter.

With the greatest possible respect for the gentleman who fills, and excellently fills, the position of architect to the London School Board, there is no manner of doubt that the real reason why expense has gone up is that the schools have been all put into the hands of one architect, and he has been paid by salary and not by commission.

I have not the smallest hesitation in saying that if I had filled Mr. Robson's post I should, as far as I could, have done exactly what he has done. I should have endeavoured to secure every improvement of every sort of which the structures were capable; and as no one could by any possibility have said that I did so because it was to my interest to run up the cost in order to increase my own commission, I should have had but little scruple in adopting improvements because they were expensive. I dare say I should not have succeeded as well as Mr. Robson has in making my buildings patterns of excellent contrivance and construction, but I should have done my best, and, as long as the Board would back me, I should have had little scruple as to outlay.

If the Board desires to economise, let them revert to the system with which they started, and on which they built their first fifty schools. Let them employ a variety of London architects, pay them commission, dismiss the large staff of draughtsmen at the building on the Thames Embankment, and give Mr. Robson the same general control over the architects which he had at first. The ratepayers will soon find out the difference in expense, and the school-buildings will be much more likely to be successful than those carried out under such sweeping reductions as Mr. Aldwinckle points to can possibly be. A School Board Architect.

A COMMON-SENSE VIEW OF ARCHITECTURAL RESTORATION.

Sir,—"C. H. C.'s" anecdote, in his recent article under this heading, concerning Mr. J. Smyth's carving at Christ Church Cathedral being taken fifty years ago for ancient work has numerous counterparts in more modern times. In 1871 one of your contemporaries published some interesting illustrations of gurgoyles and grotesques from Notre Dame, Paris. These were accompanied by a description in which the vigour of these old works was contrasted with the lifeless lumpiness of similar work wrought by men now-a-days. The next week, however, a letter appeared in the same publication, from Mr. Blomfield, a carver, of London, saying that under the immediate direction of M. Viollet-le-Duc, *he* had executed these very gurgoyles *himself* a few years before!

Further, few more beautiful monuments exist anywhere, perhaps, than are those of Bishop Bronescombe (1280) and Bishop Stafford (1419), which guard, like mute sentinels, the north and south sides of the lady-chapel at Exeter Cathedral. The cresting upon both these tombs is altogether new, and was placed there during Sir G. Gilbert Scott's restoration a few years ago. When Messrs. Clayton & Bell decorated the monuments in question the fresh paint made old and new work look alike; but, although this took place so recently, I am probably one of the few people in Exeter who have cared to remember the circumstance. Note the result. A few days ago I chanced to pass one of the tombs in question, and saw a gentleman,—evidently a visitor and an architect,—busily engaged in sketching these very crestings into his pocket-book. "You know that isn't old," I ventured to remark. "Old; isn't it, though, by Jove! What do you know about it?" he retorted, evidently thinking I was a smug Exonian linen-draper. A few words of explanation were sufficient, and the page was torn from his book. But surely precisely the same thing occurs over and over again; and you, sir, and I, and everybody else who sketch, are more or less similarly victimised. Harry Hems.

STONE AND GRANITE *v.* CEMENT.

Sir,—I am somewhat surprised that your correspondent "W. S. S.," who, I presume, knows the value of building materials, should anathematise cement, by calling houses built of that material mud houses.

Cement or concrete houses are presumably as strong as those built of stone; and whereas most stone deteriorates by age and exposure, cement, so far as is yet known, continues to increase in hardness, and it is therefore, I think, fair to assume that buildings constructed now of cement or concrete would still exist when our heirs and grandchildren come into the world.

A brick building, stuccoed over to give the appearance of stone, is the class of building to which, I presume, "W. S. S." refers; but that is evidently a brick structure, not a cement one, and I therefore cannot see how his argument as against cement can hold good even in this case.

An architect or engineer, when using stone, takes care to investigate the nature of the quarry from which the stone is procured, and further, amongst other precautions, takes care that the stone is placed in the building on its natural bed; with these precautions, stone, as a building material, has a better chance of withstanding the effects of age than the anathematised cement.

Whether it be from want of knowledge or simply carelessness on the part of users cannot be said, but the use of cement is seldom attended with the same judicious care. To ninety-nine people in a hundred cement is cement, whether it be good, bad, or indifferent, and it is not, therefore, surprising that many failures have occurred in its use.

Cement being a manufactured article may be good or bad; further, it is a most delicate material, easily affected and damaged by undue exposure and damp; besides which, the aggregates with which it is used, either as plaster, mortar, or concrete, materially affect its ultimate hardness and strength.

Given a good Portland cement, used in combination with a clean sharp sand, pulverised stone, or other suitable material, it is, as I have before said, one of the most useful of building materials, the ultimate strength of which is not even yet known.

As regards cost, there can be no comparison. A good building-stone will always pay for its carriage to a considerable distance, and is therefore dear, even in the immediate neighbourhood of the quarry; while, even in that quarry, concrete blocks could be made, at small expense, from the chippings and broken stone which are now more than useless.

Portland cement, as a building material, is daily receiving more attention, and the proper way of treating it becoming more generally understood, and I trust that, even by "W. S. S.," it will no longer be placed in the same category with mud, though the latter material is no doubt not always "matter out of place."

H. Faija.

A BOOK ON MASONRY?

Sir,—Can your readers inform me as to a good work upon masonry, and the quarries of England? I must, perhaps, try to explain my idea of a good work, that I may not cause needless trouble to any gentleman who is so kind as to endeavour to furnish me with an answer.

What I mean by a good work is one written by an architect such as Hawksmoor, or by a practical stonemason, who knows nothing about geology or the chemical composition of stone (such as,—Flint, when heated, yields nearly pure silicic acid [SiO_2]),—a work, in fact, written by a man thoroughly acquainted with his subject and the old knowledges of the trade, and without any modern science, or new may-be-wrong or may-be-right theories imported into the question.

How valuable soever geology and chemistry may be for speculative cosmogonists and amateur world builders, they have only done mischief as yet to the practical builder by endangering his faith in the old and tried processes, just as the mathematicians and acoustical theorists have confused and hurt the theories of harmony and counterpoint, and helped greatly to impede the career of the practical composer of music.

Hy. Bunting published a book called an "Itinerary of Scripture, and concerning Wrights and Masons, 1615." Does that book contain anything on this topic worth knowing?

C. A. W.

DEFILED BATH ROOMS.

Sir,—"V. R.," in your issue of the 2nd inst., writing on the above subject, strikes a chord which will be heard throughout the country, and I for one beg to tender him my thanks, and trust that he will continue to call attention to this matter of defiled bath-rooms. What "V. R." asserts is a notorious fact, and why architects persist in this uncalled-for practice does seem strange to the experienced sanitary engineer.

It is true that often on board ship, where every nook and corner has to be utilised, want of space necessitates the w.c. being screwed into a cell where there is barely room for the user to turn round, but I am glad to say that great changes for the better have been made in this particular in most of our large passenger-ships. It is only necessary to pay a visit to the magnificent vessels of any of our great passenger-carrying ocean lines, such as the Peninsular and Oriental, the White Star, the Anchor Line, &c., to perceive these improvements. In the saloon will be seen perfect sanitary appliances working efficiently,—marble baths, with douches, that would grace a palace, with no w.c. in the same compartment, but these latter fitted up apart from the bath-rooms with the greatest care, and supplied with abundance of water for cleansing purposes.

Now, sir, if on board ship, where every inch of room is valuable, we still are careful to keep the bath-rooms separate from the w.c.s, I wish to know why architects should consider it advisable to join them together in the beautiful mansions which are at present being built. Have them close to each other by all means but put the latter outside the building, and the bath in a separate room alongside on every

floor, taking care to use all the best known sanitary appliances for prevention of disagreeable smells in the closet. It is, unfortunately, only too well known among experienced sanitary engineers and plumbers, that great evils arise from the bad arrangement and construction of the house-drains and soil-pipes and closets from inefficient and bad workmanship, light and flimsy fittings, want of experienced men to supervise, and the inordinate longing on the part of builders to put in the cheapest articles they can get. Is it, then, to be wondered at that, of late years, we have had such an outcry about the prevalence of typhoid fever?

"V. R." has called attention to one evil which has arisen in sanitary arrangements of late years; but there are, unfortunately, many others besides those which I have indicated above, which often make our modern houses at night, when every aperture is closed, mere gigantic retainers of bad atmosphere, thus slowly poisoning the inmates during the very hours that they are most susceptible to that most stealthy and unseen of enemies, sewer-gas.

T. Suffield.

CARVING, GILDING, AND GERMAN METAL.

Sir,—Will you be kind enough to allow me to draw your attention to a very important subject concerning the trade of carving and gilding, principally, as it is carried on in the picture-frame business, and introduced into this country by the Germans? It is the gilding of picture-frames, alhambras, and all kinds of other patterns, with a German metal which is only a mixture of tin, zinc, and brass, the cost of which is 1½d. per book, whereas the genuine metal (English gold) costs 1s. 3d. per book. Picture-frames are being gilded in this country at the present time by foreigners in thousands with this German metal and sold for English gilding; and so well can they be got up to deceive the eye that one picture-frame shall be done with German metal and another shall be done with the genuine metal, the very best English gold: you may then call in an experienced gilder, and ask him if he can pick out the one done with the German metal, and the one done with the genuine metal, the very best English gold; and although he may be an excellent workman, and have had years of experience at the business, he will not be able to do so. The frames done with the German metal look very well for a short time, but in a little while they go black, and are done for. Pure English gold will always look well while there is a bit of gold left. They can be cleaned, touched up, and always look well and as fresh as ever; but you cannot do this with those frames done in German metal. Just take a walk into some of our picture-galleries; you will not find any German metal there. If at any time the frames in these picture-galleries should get tarnished, dusty, or dirty, a gilder is sent for, and all that he simply does is to take off the dust, wash them very carefully with a small brush, and sponge them very gently with a soft sponge and a little clean cold water, and with a clean wash-leather lightly rub the burnished parts over, and they will look as fresh as ever; but this could not be done if they were coated with this imitation gold or German metal. My principal object in writing upon this subject is to try, in my very humble way, to open the eyes of the British public as much as possible in this matter. There are thousands of well-to-do people that have nice pictures hanging round their rooms: the frames are supposed to be gilt with the very best English gold, and have been bought and paid for as such, but are a complete sham, being only done with this German metal. In conclusion, I should like to say that if you buy a picture-frame as a gold one, and it turns out a Dutch metal one, it is a fraud. Let us remember that it is not all gold that glitters.

George Ryan, Carver and Gilder.

COMPETITIONS.

Hull Borough Asylum.—Thirty-eight designs have been received in competition. The estimates vary from 27,000*l.* to 80,000*l.* The drawings are now being arranged in the town-hall.

Over Darwen.—The designs for the town-hall here and the market, sent in competition, have been on view in the Co-operative Hall.

Bulkeley Memorial.—The successful competitor herein is Mr. Thomas Brown, architect, Beaumont, Carlisle.

NEW PARKS.

Heywood.—A new public park was opened at Heywood on the 2nd inst. According to the *Manchester Courier*, the park has been provided and is to become the property of the town under very singular circumstances. Several years ago Mr. Charles M. Newhouse, a local cotton manufacturer, was proceeding by train from Heywood to Manchester, and when near Miles Platting an accident occurred. Mr. Newhouse, who occupied the carriage along with other gentlemen, got upon the steps of the vehicle. Immediately afterwards the carriage capsized and he was killed, but the rest of the passengers escaped with slight injury. As Mr. Newhouse died without heirs, his property passed into the possession of her Majesty by her right of the Duchy of Lancaster. About twelve months ago her Majesty announced her intention of disposing of this property, which, on being realised, amounted to several thousand pounds sterling, for the benefit of the inhabitants of the district, and ultimately it was decided to expend it in providing a public park. The land acquired comprises an area of twenty acres, and is situated on the banks of the river Roach, about half a mile from the centre of the town. It is very undulating, and well wooded with beech, chestnut, and other trees, and from a plateau a fine view is obtained of the surrounding district. A stone fountain occupies the centre space at the convergence of the principal walks. In the lower part of the park there is a lake. A bowling-green is provided, and a band-house has also been erected. The various works in connexion with the park have been carried out under the direction of Mr. G. R. Cartwright, of the office of the Surveyor-General of the Duchy of Lancaster at Harrogate. The contractors have been,—for masonry, Messrs. Diggle Bros.; painting, &c., Mr. W. Warburton; for the cutting of the walks, &c., Mr. W. Turner; and the Coalbrookdale Iron Company.

Huddersfield.—A special meeting of the Huddersfield Town Council was held on the 8th inst. to consider a proposed gift of twenty-five acres of land by Mr. Henry F. Beaumont for a public park at Dungeonwood, about a mile and three-quarters from the centre of Huddersfield. The council almost unanimously decided to accept the gift, and it is proposed to spend about 5,000*l.* in preparing the ground for a park.

Aberdeen.—At a meeting of the St. Nicholas Association of Aberdeen on the 6th inst., a letter was read from Mr. Jas. Tulloch, jun., offering with a view of assisting the proposal that the vacant ground west of South Crown-street, lying between Rosebank and Springbank terraces, should be turned into public recreation ground, to raise one-third of the purchase price in the event of the association seeing their way to acquire the ground for the purpose indicated. After considerable discussion the meeting resolved, while thanking Mr. Tulloch for his offer and the trouble he had taken in the matter, to defer consideration of the scheme until it can be ascertained what the probability is of acquiring also the piece of ground in front of Bon-Accord-terrace, in order that the whole may form the public park. Professor Stephenson, Mr. J. R. Mackenzie, architect, Mr. J. Willet, C.E., and Dr. Angus Fraser were appointed as a committee to inquire into the matter and report.

Salford. — On the 9th inst. Ordsal Park, situated in the Regent-road district of Salford,—the fourth park established by the Corporation of Salford,—was formally opened by Mr. Alderman Davies, chairman of the Salford Museum, Libraries, and Parks committee. The park covers an area of nearly sixteen acres, which was purchased from Lord Egerton for about 6,000*l.* It lies in the centre of a large and growing population of working people. The task of designing and executing the arrangement of the park ground was entrusted by the Corporation of Salford to Mr. Henry Moore, head gardener of Peel Park, who designed Seedley and Albert Parks. The total cost of the park,—including the site, the laying out of the ground, and the boundary-wall and railings,—is about 15,000*l.* The main entrance is in South Cross-lane.

Kilmarnock.—On the 9th inst. the Kay Park, Kilmarnock, was formally opened. The park is the gift of Mr. Alexander Kay, a native of Kilmarnock, who amassed a fortune as an insurance broker in Glasgow, and at his death in 1866 bequeathed 16,000*l.* to "Auld Killie,"—6,000*l.* for the erection and endowment of two schools, and the remainder for the purchase of a public park. The land so acquired, forming part of the estate of the Duke of Portland, extends to 40¾ acres, and was purchased for 9,000*l.* A portion of the ground, about 3½ acres, has been set apart for feuing, while power has been given to the permanent trustees to let, for agricultural purposes, 15 acres, which, however, will be available at any time for the extension of the park. The park has been laid out by Mr. D. M'Lellan, curator of the Glasgow parks. Besides the Burns monument unveiled on the same day, a notable object in the grounds is a fountain, the gift of Mrs. Crooks, wife of the late Bailie Crooks, and daughter of the late Provost Strang. This structure, which rises to the height of 22 ft. 9 in., has a ground basin 30 ft. 6 in. in diameter, constructed of concrete. The centre column of the fountain is surmounted by a group of boy and serpent, the number of jets being fifty-one.

DOCKS.

London.—On the 2nd inst. a new basin of the East and West India Dock Company was opened, an extension of the docks at Blackwall. This addition to the dock accommodation of the Port of London is especially noticeable because of the great depth of the entrance lock and new basin. At ordinary spring tides there are 31 ft. of water above the stone sills against which the lower edge of the gates fit, and the largest ocean-going steamers can, therefore, enter the basin for some time before or after high water. This, it is said, is a greater depth by some 4 ft. than is to be found in any other docks on the Thames. The new basin has an area of about six acres. It is irregularly shaped, the north quay being 600 ft. in length, the east quay 455 ft., and the south quay, between the new and the old locks, by which the enlarged basin is entered, 270 ft. The wall of the dock, having a total thickness of 20 ft. at the bottom and 8 ft. at the top, is formed of Portland cement concrete, faced with 3 ft. of brickwork. On the north and east quays extensive warehouses, three stories high, have been built, and improved machinery has been erected for loading ships and discharging cargoes expeditiously. The hydraulic machinery is in some respects peculiar. According to the *Times*, the new lock is 65 ft. wide, and is fitted with two pairs of wrought-iron double-skinned gates, which, hollow and like great caissons, are at once strong and buoyant. These gates are moved quickly and easily by hydraulic machinery. The works, which have taken three years and a half to complete, have been carried out at a cost of about 240,000*l.*, under the direction of Mr. A. Manning, the dock company's engineer; Mr. B. Stockman, resident engineer; and Mr. R. L. Berwick, assistant engineer.

Inverkeithing. — A deputation from Inverkeithing Town Council has waited on the directors of the North British Railway Company in regard to the construction of a new dock at Inverkeithing. Plans prepared by Mr. John Buchanan, C.E., Edinburgh, were submitted, and it was stated that a dock, covering a superficial area of nearly forty acres, could be constructed for 75,000*l.* The directors have the proposal under consideration.

BATHS AND WASHHOUSES.

Chatham.—The Chatham Local Board of Health has resolved to establish a large swimming-bath, where the public may be instructed in swimming.

Birmingham.—New and extensive Turkish baths have lately been erected in Birmingham, by joint-stock enterprise. A site having been secured in High-street, it was decided to expend a sum not exceeding 3,000*l.* upon the construction of the baths, and some of the leading builders of the town and district were invited to tender for the carrying out of the work according to the designs of Mr. H. W. Ward. Eventually, Messrs. Horsley Brothers' estimate, which amounted to 2,795*l.*, was accepted. The work was then pushed forward without delay, and the baths have lately been opened. The temperature of the hottest room varies from 200° to 250°. The heating apparatus was supplied by Messrs. Crichley & Co. The stained-glass work has been supplied by Messrs. J. & O. C. Hawkes, and the burnished brass chandeliers and gas-fittings are from the manufactory of Messrs. Power & Co.

Rotherhithe.—At their last meeting, the Rotherhithe Vestry had under consideration the application of the Commissioners of Baths and Washhouses of the parish, that the vestry would sanction their borrowing at interest the further sum of 18,500*l.*, on the security of a mortgage of the poor-rates, to be expended in the construction of baths and washhouses. Mr. Bulmer moved that the Vestry grant the application, and explained that the ground for the buildings had been cleared, and the plans and estimates prepared and submitted to the Vestry, and they were anxious to get out the contracts before the winter. The estimate of the surveyor for the buildings was 14,300*l.*; the balance of the total sum of 20,000*l.* would be set aside for the purchase of fittings and machinery. The motion was carried.

MARKETS.

Chelmsford.—A new cattle-market is in course of formation at Chelmsford. Mr. J. Walker is the contractor for the roads, and Messrs. Choat for the shedding for the horses and the sales by auction, and the building of the settling-house proceeding. These several erections are composed of white stock bricks and red tiles. A staff of workmen in the employment of Mr. Fletcher, of Wolverhampton, are putting up the iron fencing of the various pens and inclosures, and those in the employment of Mr. J. H. Wray are paving the pens with Staffordshire blue bricks.

Liverpool.—At the meeting of the Liverpool Town Council, on the 6th inst., Mr. M'Ardle moved "That the Markets Committee be requested to report to the Council on the adaptation of St. Martin's Market for the purposes of a fish and poultry market, in substitution of the present fish-market in Great Charlotte-street." Mr. M'Ardle said St. Martin's Market contained a very large area, was well adapted for a wholesale fish-market, and was near to the other wholesale markets. The motion was agreed to.

Stratford.—On the 1st proximo, there will be opened at Stratford, by the Great Eastern Railway Company, a new market for potatoes, roots, vegetables, hay, straw, coals, &c., which will adjoin the Stratford-bridge station. It will possess every convenience for a large trade, standing-room being provided for over 400 trucks, and the cart-roads between the sidings 40 ft., 50 ft., and 60 ft. wide. The warehouses measure 60 ft. by 45 ft., and are fitted up with convenient offices, and two lines of rails run through it.

Blackpool.—Shortly after six o'clock on the morning of the 7th inst. a fire was discovered in Read's New Market Hall, Central Beech, Blackpool. A strong gale was blowing at the time from the sea, and as the building immediately faces the promenade, the gale fanned the flames, which spread with fearful rapidity, and the building was soon completely gutted.

NEW BRIDGES.

Broomielaw.—The new railway bridge across the harbour at Broomielaw has been completed, and formally opened. The bridge has been erected by Messrs. Wm. Arrol & Co., Dalmarnock Works, for the Caledonian Railway Company.

The Forth.—The *Scotsman* says, that at a meeting of the directors of the Forth Bridge Railway Company, on the 6th inst., the tenders for the different sections of the Forth Bridge undertaking, received from the firms whose estimates had been invited, were opened and examined. In view, however, of the necessity for preliminary inquiries in connexion with the different contracts, no final decision as to the acceptance of any offer was come to.

Russia.—What is stated to be the largest bridge in Europe will be completed next year. It will cross the Volga in the government of Samara, Russia, on the Siberia railroad line. The Volga, at the point of the bridge, is about four miles wide in the spring season, and in the autumn is 4,732 ft. The bridge will be supported by twelve piers 85 ft. high, with ice-cutters 35 ft. high, at a distance of every 364 ft. The ice-cutters are covered with granite. A temporary colony is established for working men employed on the bridge. It occupies about fifty-five acres, and has sixty different buildings, insured at 100,000 roubles. 2,000 men are employed, and amongst them are 100 Italian masons.

Salford.—At a meeting of the Salford Town Council, on the 6th inst., Mr. Alderman Dewhurst proposed the confirmation of the following resolution of the building committee:—"That the tender of Messrs. A. Pilling & Son be accepted for the ironwork of the Springfield-lane bridge, in accordance with the plans and specifications, for the sum of 4,117*l.* 16s. 9d., and that the Town Clerk do prepare the contract." The resolution was confirmed.

GAS JOTTINGS.

Cambridge.—At the half-yearly meeting of the Cambridge Gas Company, on the 30th ult., it was resolved to raise additional capital to the extent of 25,000*l.* for new works now in course of construction.

Warrington.—The gas accounts of the Corporation of Warrington for the nine months ending the 25th of March last show a net profit of 4,204*l.*

Walsall.—The profits of the Walsall Gasworks last year amounted to 4,139*l.*, and the portion of the profits for the year ensuing to come into the funds of the Corporation was set down in the estimates at 4,000*l.*, which, it is stated, will reduce the rates to the extent of 10d. in the pound.

Glasgow.—On the 7th inst., on the invitation of Mr. A. Buchanan Miller, architect, Glasgow, several persons connected with the manufacture of gas visited the printing works of Mr. Alexander Crum, Thornliebank, to inspect a new process for the manufacture of gas. The novelty of the invention consists in charging the gas-retort with common coal dross instead of the more expensive coal hitherto used, and when the retort has been raised to the necessary heat, the light hydrocarbon gases evolved during the first fifteen or twenty minutes are led off by a branch-pipe from the ordinary ascension-pipe (before it passes through the hydraulic main) into a separate or special gasholder of ordinary construction, where it is stored for use. It is claimed that a thoroughly pure gas is obtained, altogether free from bisulphate of carbon. A ton weight of common dross is stated to yield about 10,000 cubic feet of gas, of an average illuminating power of twenty candles; but by the new method of taking off 1,000 ft. at the first stage of the distilling process, and leaving 1,000 ft. of gas to be taken off at the last stage of the process, it is claimed that about 8,000 ft. of pure gas is obtained of an illuminating power equal to twenty-eight candles.

Newbury.—Major Tulloch held an inquiry on behalf of the Local Government Board at the Municipal Buildings at Newbury, on the 1st inst., in reference to the proposal of the town council to erect new gas-works within a short distance of the goods station.

DOME OF THE ROCK.

SIR,—With respect to Lieutenant Conder's series of questions in your last number, in reference to my communication from Rome to Mr. Barry, I beg to remark that, as to the materials in which the horizontal beams connecting the inner peristyle of columns are constructed, I am unable to inform him, not having had the means of testing them. But the materials locally available would be likely to prevail both at Rome and Jerusalem.

As to the age of the mosaics, the accepted opinion is, I think, most probably the correct one, from comparison with other reputed fourth-century mosaics still existing in Rome.

As to the *absolute certainty* of the authorship of the buildings in question, I may say that nothing advanced by Lieut. Conder at all invalidates the prevailing opinion which attributes the two Roman buildings to Constantine; and, in the absence of evidence to the contrary, I have no reason to doubt conclusions which I have shown to bear the marks of high probability.

There is no upper range of columns at the mausoleum of Constantia and Helena, whose sarcophagus has been removed to the Vatican.

The other matters referred to have been dealt with by Mr. Fergusson.

EDW. C. ROBINS.

Eddystone Lighthouse.—The foundation-stone of the new Eddystone Lighthouse was successfully laid on Tuesday by H.R.H. the Duke of Edinburgh.

Books.

The Industrial Arts in Spain. By JUAN F. RIAÑO. Chapman & Hall. 1879.

THE Committee of Council on Education have wisely entrusted to the hands of a Spanish gentleman the preparation of a handbook on the industrial art of Spain, which, probably, could not have been adequately carried out by any one who had not such knowledge of the country as only a resident could acquire. For various reasons Spain is, even in these days of universal locomotion, less understood in regard to its arts and products than almost any other of the great European nations. This small and comprehensive volume will probably be very useful in giving to many who are very much in the dark on the subject, a connected idea as to what is to be looked for in Spanish industrial art, and what is the nature of its excellence. The volume deals with the subjects of gold and silver work, iron work, bronzes, arms, furniture, ivories, pottery and porcelain, glass, textile fabrics, and lace, and is illustrated by fifty woodcuts, in some cases representing objects of unusual beauty and interest.

The author does not go into any general history or critical review of Spanish art, for which we presume the reader would be referred to his catalogue of the objects of Spanish art at South Kensington, published some six years since; he merely treats each branch of his subject separately, and gives the outline of what is to be said and to be known about; but from incidental remarks here and there we pick up food for reflection in regard to the peculiarities of Spanish art and its relationship to that of Europe generally, especially in an historical point of view. One remark in the chapter on glass opens a pretty wide field for future investigation to the historian of art. Noticing the fact that the ornamentation of glass by the running of a thread or line all over the glass, peculiar to Roman glass ware, was revived in the fifteenth and sixteenth centuries, and that this form was especially a favourite in Spain, he observes "it is an interesting fact that objects of a traditional Moorish form have the greatest amount of lines of this style of ornamentation. We cannot, until this subject is more thoroughly investigated, do otherwise than infer either that the tradition of this industry was preserved in Spain, or that the Arabs imported this style of decoration from the same localities from which it had been copied by the Romans centuries before." Another point in the chapter on glass worth mention is that in certain glass-making localities in Spain, the tradition of Italian models was kept up to a very recent period, and that the glass made in these localities closely resembles the Venetian glass in character,—so much so, that it is reasonable to conclude that not a few objects of this description which have been classed as Venetian may have been made in Spain. The illustration showing a vase of green glass (p. 242), Spanish of the seventeenth century, entirely bears out this view; it has the characteristics of Venetian design to a very marked degree.

Part of the interest special to Spanish ornamental art, in addition to its intrinsic beauty, lies certainly in the mingling of styles derived from various sources which it presents. The earlier art is largely influenced by Oriental feeling imported by the Arabs; the later art is influenced, of course, by Italian Renaissance. But this takes often a peculiar, more enriched, and Gothicised form when it reaches the Spanish peninsula; and still more often Gothic and Moorish elements are mixed, or found side by side, in the same design. The author gives a full description, in exemplification of this, of an armoire formerly in the church of the monastery of Piedro in Aragon, now in the Academia de la Historia (at Madrid?). Externally much of the ornament is purely Oriental in style, but accompanied by a Latin inscription in Gothic characters. "When the triptych is opened several compartments appear, formed by cusped Gothic arches placed within others, in the form of a mitre divided by pinnacles. The ornamentation which fills the space between the arches, and the seven banderoles in the lower part, are in pure Gothic style, without a reminiscence of Moorish art"; but "the details and several of the architectural lines of the Gothic part of this ornamentation denote an Italian influence, probably Sicilian, for this province belonged then to the crown of Aragon." A splendid piece of furniture-

floor, taking care to use all the best known sanitary appliances for prevention of disagreeable smells in the closet. It is, unfortunately, only too well known among experienced sanitary engineers and plumbers, that great evils arise from the bad arrangement and construction of the house-drains and soil-pipes and closets from inefficient and bad workmanship, light and flimsy fittings, want of experienced men to supervise, and the inordinate longing on the part of builders to put in the cheapest articles they can get. Is it, then, to be wondered at that, of late years, we have had such an outcry about the prevalence of typhoid fever?

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T. Suffield.

CARVING, GILDING, AND GERMAN METAL.

Sir,—Will you be kind enough to allow me to draw your attention to a very important subject concerning the trade of carving and gilding, principally, as it is carried on in the picture-frame business, and introduced into this country by the Germans? It is the gilding of picture-frames, alhambras, and all kinds of other patterns, with a German metal which is only a mixture of tin, zinc, and brass, the cost of which is 1½d. per book, whereas the genuine metal (English gold) costs 1s. 3d. per book. Picture-frames are being gilded in this country at the present time by foreigners in thousands with this German metal and sold for English gilding; and so well can they be got up to deceive the eye that one picture-frame shall be done with German metal and another shall be done with the genuine metal, the very best English gold: you may then call in an experienced gilder, and ask him if he can pick out the one done with the German metal, and the one done with the genuine metal, the very best English gold; and although he may be an excellent workman, and have had years of experience at the business, he will not be able to do so. The frames done with the German metal look very well for a short time, but in a little while they go black, and are done for. Pure English gold will always look well while there is a bit of gold left. They can be cleaned, touched up, and always look well and as fresh as ever; but you cannot do this with those frames done in German metal. Just take a walk into some of our picture-galleries; you will not find any German metal there. If at any time the frames in these picture-galleries should get tarnished, dusty, or dirty, a gilder is sent for, and all that he simply does is to take off the dust, wash them very carefully with a small brush, and sponge them very gently with a soft sponge and a little clean cold water, and with a clean wash-leather lightly rub the burnished parts over, and they will look as fresh as ever; but this could not be done if they were coated with this imitation gold or German metal. My principal object in writing upon this subject is to try, in my very humble way, to open the eyes of the British public as much as possible in this matter. There are thousands of well-to-do people that have nice pictures hanging round their rooms: the frames are supposed to be gilt with the very best English gold, and have been bought and paid for as such, but are a complete sham, being only done with this German metal. In conclusion, I should like to say that if you buy a picture-frame as a gold one, and it turns out a Dutch metal one, it is a fraud. Let us remember that it is not all gold that glitters.

George Ryan, Carver and Gilder.

COMPETITIONS.

Hull Borough Asylum.—Thirty-eight designs have been received in competition. The estimates vary from 27,000*l.* to 80,000*l.* The drawings are now being arranged in the town-hall.

Over Darwen.—The designs for the town-hall here and the market, sent in competition, have been on view in the Co-operative Hall.

Bulkeley Memorial.—The successful competitor herein is Mr. Thomas Brown, architect, Beaumont, Carlisle.

NEW PARKS.

Heywood.—A new public park was opened at Heywood on the 2nd inst. According to the *Manchester Courier*, the park has been provided and is to become the property of the town under very singular circumstances. Several years ago Mr. Charles M. Newhouse, a local cotton manufacturer, was proceeding by train from Heywood to Manchester, and when near Miles Platting an accident occurred. Mr. Newhouse, who occupied the carriage along with other gentlemen, got upon the steps of the vehicle. Immediately afterwards the carriage capsized and he was killed, but the rest of the passengers escaped with slight injury. As Mr. Newhouse died without heirs, his property passed into the possession of her Majesty by her right of the Duchy of Lancaster. About twelve months ago her Majesty announced her intention of disposing of this property, which, on being realised, amounted to several thousand pounds sterling, for the benefit of the inhabitants of the district, and ultimately it was decided to expend it in providing a public park. The land acquired comprises an area of twenty acres, and is situated on the banks of the river Roach, about half a mile from the centre of the town. It is very undulating, and well wooded with beech, chestnut, and other trees, and from a plateau a fine view is obtained of the surrounding district. A stone fountain occupies the centre space at the convergence of the principal walks. In the lower part of the park there is a lake. A bowling-green is provided, and a band-house has also been erected. The various works in connexion with the park have been carried out under the direction of Mr. G. R. Cartwright, of the office of the Surveyor-General of the Duchy of Lancaster at Harrogate. The contractors have been,—for masonry, Messrs. Diggle Bros.; painting, &c., Mr. W. Warburton; for the cutting of the walks, &c., Mr. W. Turner; and the Coalbrookdale Iron Company.

Huddersfield.—A special meeting of the Huddersfield Town Council was held on the 8th inst. to consider a proposed gift of twenty-five acres of land by Mr. Henry F. Beaumont for a public park at Dungeonwood, about a mile and three-quarters from the centre of Huddersfield. The council almost unanimously decided to accept the gift, and it is proposed to spend about 5,000*l.* in preparing the ground for a park.

Aberdeen.—At a meeting of the St. Nicholas Association of Aberdeen on the 6th inst., a letter was read from Mr. Jas. Tulloch, jun., offering with a view of assisting the proposal that the vacant ground west of South Crown-street, lying between Rosebank and Springbank terraces, should be turned into public recreation ground, to raise one-third of the purchase price in the event of the association seeing their way to acquire the ground for the purpose indicated. After considerable discussion the meeting resolved, while thanking Mr. Tulloch for his offer and the trouble he had taken in the matter, to defer consideration of the scheme until it can be ascertained what the probability is of acquiring also the piece of ground in front of Bon-Accord-terrace, in order that the whole may form the public park. Professor Stephenson, Mr. J. R. Mackenzie, architect, Mr. J. Willet, C.E., and Dr. Angus Fraser were appointed as a committee to inquire into the matter and report.

Salford.—On the 9th inst. Ordsal Park, situated in the Regent-road district of Salford,—the fourth park established by the Corporation of Salford,—was formally opened by Mr. Alderman Davies, chairman of the Salford Museum, Libraries, and Parks committee. The park covers an area of nearly sixteen acres, which was purchased from Lord Egerton for about 6,000*l.* It lies in the centre of a large and growing population of working people. The task of designing and executing the arrangement of the park ground was entrusted by the Corporation of Salford to Mr. Henry Moore, head gardener of Peel Park, who designed Seedley and Albert Parks. The total cost of the park,—including the site, the laying out of the ground, and the boundary-wall and railings,—is about 15,000*l.* The main entrance is in South Cross-lane.

Kilmarnock.—On the 9th inst. the Kay Park, Kilmarnock, was formally opened. The park is the gift of Mr. Alexander Kay, a native of Kilmarnock, who amassed a fortune as an insurance broker in Glasgow, and at his death in 1866 bequeathed 16,000*l.* to "Auld Killie,"—6,000*l.* for the erection and endowment of two schools, and the remainder for the purchase of a public park. The land so acquired, forming part of the estate of the Duke of Portland, extends to 40¾ acres, and was purchased for 9,000*l.* A portion of the ground, about 3½ acres, has been set apart for feuing, while power has been given to the permanent trustees to let, for agricultural purposes, 15 acres, which, however, will be available at any time for the extension of the park. The park has been laid out by Mr. D. M'Lellan, curator of the Glasgow parks. Besides the Burns monument unveiled on the same day, a notable object in the grounds is a fountain, the gift of Mrs. Crooks, wife of the late Bailie Crooks, and daughter of the late Provost Strang. This structure, which rises to the height of 22 ft. 9 in., has a ground basin 30 ft. 6 in. in diameter, constructed of concrete. The centre column of the fountain is surmounted by a group of boy and serpent, the number of jets being fifty-one.

DOCKS.

London.—On the 2nd inst. a new basin of the East and West India Dock Company was opened, an extension of the docks at Blackwall. This addition to the dock accommodation of the Port of London is especially noticeable because of the great depth of the entrance lock and new basin. At ordinary spring tides there are 31 ft. of water above the stone sills against which the lower edge of the gates fit, and the largest ocean-going steamers can, therefore, enter the basin for some time before or after high water. This, it is said, is a greater depth by some 4 ft. than is to be found in any other docks on the Thames. The new basin has an area of about six acres. It is irregularly shaped, the north quay being 600 ft. in length, the east quay 455 ft., and the south quay, between the new and the old locks, by which the enlarged basin is entered, 270 ft. The wall of the dock, having a total thickness of 20 ft. at the bottom and 8 ft. at the top, is formed of Portland cement concrete, faced with 3 ft. of brickwork. On the north and east quays extensive warehouses, three stories high, have been built, and improved machinery has been erected for loading ships and discharging cargoes expeditiously. The hydraulic machinery is in some respects peculiar. According to the *Times*, the new lock is 65 ft. wide, and is fitted with two pairs of wrought-iron double-skinned gates, which, hollow and like great caissons, are at once strong and buoyant. These gates are moved quickly and easily by hydraulic machinery. The works, which have taken three years and a half to complete, have been carried out at a cost of about 240,000*l.*, under the direction of Mr. A. Manning, the dock company's engineer; Mr. B. Stockman, resident engineer; and Mr. R. L. Berwick, assistant engineer.

Inverkeithing.—A deputation from Inverkeithing Town Council has waited on the directors of the North British Railway Company in regard to the construction of a new dock at Inverkeithing. Plans prepared by Mr. John Buchanan, C.E., Edinburgh, were submitted, and it was stated that a dock, covering a superficial area of nearly forty acres, could be constructed for 75,000*l.* The directors have the proposal under consideration.

BATHS AND WASHHOUSES.

Chatham.—The Chatham Local Board of Health has resolved to establish a large swimming-bath, where the public may be instructed in swimming.

Birmingham.—New and extensive Turkish baths have lately been erected in Birmingham, by joint-stock enterprise. A site having been secured in High-street, it was decided to expend a sum not exceeding 3,000*l.* upon the construction of the baths, and some of the leading builders of the town and district were invited to tender for the carrying out of the work according to the designs of Mr. H. W. Ward. Eventually, Messrs. Horsley Brothers' estimate, which amounted to 2,795*l.*, was accepted. The work was then pushed forward without delay, and the baths have lately been opened. The temperature of the hottest room varies from 200° to 250°. The heating apparatus was supplied by Messrs. Crichley & Co. The stained-glass work has been supplied by Messrs. J. & O. C. Hawkes, and the burnished brass chandeliers and gas-fittings are from the manufactory of Messrs. Power & Co.

Rotherhithe.—At their last meeting, the Rotherhithe Vestry had under consideration the application of the Commissioners of Baths and Washhouses of the parish, that the vestry would sanction their borrowing at interest the further sum of 18,500*l.*, on the security of a mortgage of the poor-rates, to be expended in the construction of baths and washhouses. Mr. Bulmer moved that the Vestry grant the application, and explained that the ground for the buildings had been cleared, and the plans and estimates prepared and submitted to the Vestry, and they were anxious to get out the contracts before the winter. The estimate of the surveyor for the buildings was 14,300*l.*; the balance of the total sum of 20,000*l.* would be set aside for the purchase of fittings and machinery. The motion was carried.

MARKETS.

Chelmsford.—A new cattle-market is in course of formation at Chelmsford. Mr. J. Walker is the contractor for the roads, and Messrs. Choat for the shedding for the horses and the sales by auction, and the building of the settling-house proceeding. These several erections are composed of white stock bricks and red tiles. A staff of workmen in the employment of Mr. Fletcher, of Wolverhampton, are putting up the iron fencing of the various pens and inclosures, and those in the employment of Mr. J. H. Wray are paving the pens with Staffordshire blue bricks.

Liverpool.—At the meeting of the Liverpool Town Council, on the 6th inst., Mr. M'Ardle moved "That the Markets Committee be requested to report to the Council on the adaptation of St. Martin's Market for the purposes of a fish and poultry market, in substitution of the present fish-market in Great Charlotte-street." Mr. M'Ardle said St. Martin's Market contained a very large area, was well adapted for a wholesale fish-market, and was near to the other wholesale markets. The motion was agreed to.

Stratford.—On the 1st proximo, there will be opened at Stratford, by the Great Eastern Railway Company, a new market for potatoes, roots, vegetables, hay, straw, coals, &c., which will adjoin the Stratford-bridge station. It will possess every convenience for a large trade, standing-room being provided for over 400 trucks, and the cart-roads between the sidings 40 ft., 50 ft., and 60 ft. wide. The warehouses measure 60 ft. by 45 ft., and are fitted up with convenient offices, and two lines of rails run through it.

Blackpool.—Shortly after six o'clock on the morning of the 7th inst. a fire was discovered in Read's New Market Hall, Central Beech, Blackpool. A strong gale was blowing at the time from the sea, and as the building immediately faces the promenade, the gale fanned the flames, which spread with fearful rapidity, and the building was soon completely gutted.

NEW BRIDGES.

Broomielaw.—The new railway bridge across the harbour at Broomielaw has been completed, and formally opened. The bridge has been erected by Messrs. Wm. Arrol & Co., Dalmarnock Works, for the Caledonian Railway Company.

The Forth.—The *Scotsman* says, that at a meeting of the directors of the Forth Bridge Railway Company, on the 6th inst., the tenders for the different sections of the Forth Bridge undertaking, received from the firms whose estimates had been invited, were opened and examined. In view, however, of the necessity for preliminary inquiries in connexion with the different contracts, no final decision as to the acceptance of any offer was come to.

Russia.—What is stated to be the largest bridge in Europe will be completed next year. It will cross the Volga in the government of Samara, Russia, on the Siberia railroad line. The Volga, at the point of the bridge, is about four miles wide in the spring season, and in the autumn is 4,732 ft. The bridge will be supported by twelve piers 85 ft. high, with ice-cutters 35 ft. high, at a distance of every 364 ft. The ice-cutters are covered with granite. A temporary colony is established for working men employed on the bridge. It occupies about fifty-five acres, and has sixty different buildings, insured at 100,000 roubles. 2,000 men are employed, and amongst them are 100 Italian masons.

Salford.—At a meeting of the Salford Town Council, on the 6th inst., Mr. Alderman Dewhurst proposed the confirmation of the following resolution of the building committee:—"That the tender of Messrs. A. Pilling & Son be accepted for the ironwork of the Springfield-lane bridge, in accordance with the plans and specifications, for the sum of 4,117*l.* 16*s.* 9*d.*, and that the Town Clerk do prepare the contract." The resolution was confirmed.

GAS JOTTINGS.

Cambridge.—At the half-yearly meeting of the Cambridge Gas Company, on the 30th ult., it was resolved to raise additional capital to the extent of 25,000*l.* for new works now in course of construction.

Warrington.—The gas accounts of the Corporation of Warrington for the nine months ending the 25th of March last show a net profit of 4,204*l.*

Walsall.—The profits of the Walsall Gasworks last year amounted to 4,139*l.*, and the portion of the profits for the year ensuing to come into the funds of the Corporation was set down in the estimates at 4,000*l.*, which, it is stated, will reduce the rates to the extent of 10*d.* in the pound.

Glasgow.—On the 7th inst., on the invitation of Mr. A. Buchanan Miller, architect, Glasgow, several persons connected with the manufacture of gas visited the printing works of Mr. Alexander Crum, Thornliebank, to inspect a new process for the manufacture of gas. The novelty of the invention consists in charging the gas-retort with common coal dross instead of the more expensive coal hitherto used, and when the retort has been raised to the necessary heat, the light hydrocarbon gases evolved during the first fifteen or twenty minutes are led off by a branch-pipe from the ordinary ascension-pipe (before it passes through the hydraulic main) into a separate or special gasholder of ordinary construction, where it is stored for use. It is claimed that a thoroughly pure gas is obtained, altogether free from bisulphate of carbon. A ton weight of common dross is stated to yield about 10,000 cubic feet of gas, of an average illuminating power of twenty candles; but by the new method of taking off 1,000 ft. at the first stage of the distilling process, and leaving 1,000 ft. of gas to be taken off at the last stage of the process, it is claimed that about 8,000 ft. of pure gas is obtained of an illuminating power equal to twenty-eight candles.

Newbury.—Major Tulloch held an inquiry on behalf of the Local Government Board at the Municipal Buildings at Newbury, on the 1st inst., in reference to the proposal of the town council to erect new gas-works within a short distance of the goods station.

DOME OF THE ROCK.

SIR,—With respect to Lieutenant Conder's series of questions in your last number, in reference to my communication from Rome to Mr. Barry, I beg to remark that, as to the materials in which the horizontal beams connecting the inner peristyle of columns are constructed, I am unable to inform him, not having had the means of testing them. But the materials locally available would be likely to prevail both at Rome and Jerusalem.

As to the age of the mosaics, the accepted opinion is, I think, most probably the correct one, from comparison with other reputed fourth-century mosaics still existing in Rome.

As to the *absolute certainty* of the authorship of the buildings in question, I may say that nothing advanced by Lieut. Conder at all invalidates the prevailing opinion which attributes the two Roman buildings to Constantine; and, in the absence of evidence to the contrary, I have no reason to doubt conclusions which I have shown to bear the marks of high probability.

There is no upper range of columns at the mausoleum of Constantia and Helena, whose sarcophagus has been removed to the Vatican.

The other matters referred to have been dealt with by Mr. Fergusson.

EDW. C. ROBINS.

Eddystone Lighthouse.—The foundation-stone of the new Eddystone Lighthouse was successfully laid on Tuesday by H.R.H. the Duke of Edinburgh.

Books.

The Industrial Arts in Spain. By JUAN F. RIAÑO. Chapman & Hall. 1879.

THE Committee of Council on Education have wisely entrusted to the hands of a Spanish gentleman the preparation of a handbook on the industrial art of Spain, which, probably, could not have been adequately carried out by any one who had not such knowledge of the country as only a resident could acquire. For various reasons Spain is, even in these days of universal locomotion, less understood in regard to its arts and products than almost any other of the great European nations. This small and comprehensive volume will probably be very useful in giving to many who are very much in the dark on the subject, a connected idea as to what is to be looked for in Spanish industrial art, and what is the nature of its excellence. The volume deals with the subjects of gold and silver work, iron work, bronzes, arms, furniture, ivories, pottery and porcelain, glass, textile fabrics, and lace, and is illustrated by fifty woodcuts, in some cases representing objects of unusual beauty and interest.

The author does not go into any general history or critical review of Spanish art, for which we presume the reader would be referred to his catalogue of the objects of Spanish art at South Kensington, published some six years since; he merely treats each branch of his subject separately, and gives the outline of what is to be said and to be known about; but from incidental remarks here and there we pick up food for reflection in regard to the peculiarities of Spanish art and its relationship to that of Europe generally, especially in an historical point of view. One remark in the chapter on glass opens a pretty wide field for future investigation to the historian of art. Noticing the fact that the ornamentation of glass by the running of a thread or line all over the glass, peculiar to Roman glass ware, was revived in the fifteenth and sixteenth centuries, and that this form was especially a favourite in Spain, he observes "it is an interesting fact that objects of a traditional Moorish form have the greatest amount of lines of this style of ornamentation. We cannot, until this subject is more thoroughly investigated, do otherwise than infer either that the tradition of this industry was preserved in Spain, or that the Arabs imported this style of decoration from the same localities from which it had been copied by the Romans centuries before." Another point in the chapter on glass worth mention is that in certain glass-making localities in Spain, the tradition of Italian models was kept up to a very recent period, and that the glass made in these localities closely resembles the Venetian glass in character,—so much so, that it is reasonable to conclude that not a few objects of this description which have been classed as Venetian may have been made in Spain. The illustration showing a vase of green glass (p. 242), Spanish of the seventeenth century, entirely bears out this view; it has the characteristics of Venetian design to a very marked degree.

Part of the interest special to Spanish ornamental art, in addition to its intrinsic beauty, lies certainly in the mingling of styles derived from various sources which it presents. The earlier art is largely influenced by Oriental feeling imported by the Arabs; the later art is influenced, of course, by Italian Renaissance. But this takes often a peculiar, more enriched, and Gothicised form when it reaches the Spanish peninsula; and still more often Gothic and Moorish elements are mixed, or found side by side, in the same design. The author gives a full description, in exemplification of this, of an armoire formerly in the church of the monastery of Piedro in Aragon, now in the Academia de la Historia (at Madrid?). Externally much of the ornament is purely Oriental in style, but accompanied by a Latin inscription in Gothic characters. "When the triptych is opened several compartments appear, formed by cusped Gothic arches placed within others, in the form of a mitre divided by pinnacles. The ornamentation which fills the space between the arches, and the seven banderoles in the lower part, are in pure Gothic style, without a reminiscence of Moorish art"; but "the details and several of the architectural lines of the Gothic part of this ornamentation denote an Italian influence, probably Sicilian, for this province belonged then to the crown of Aragon." A splendid piece of furniture-

design, of which an illustration is given (page 115), furnishes a remarkable and rich example of combination of Moorish and Gothic feeling. This is in the Museum at South Kensington, and it presents the opposite combination to that in the last-named example, the exterior being more Gothic in taste, the interior more Moorish; but it is impossible wholly to separate the characteristics of the two styles, for the fine foliage ornament filling the outer spandrels of the large arched opening, though decidedly more Gothic than anything else, has a certain richness of design, accompanied by a flat manner of execution, suggestive of Oriental habits of workmanship; while in the interior, though the lower miniature arcade is almost purely Moorish, the upper one looks rather like the idea of Gothic trefoil arches treated in a Moorish manner. The whole is in the finest and most beautiful artistic feeling, and has quite sufficient unity of design to satisfy the eye and appear complete; it is only when it is analysed in detail that its peculiar combinations become decidedly apparent.

The chapter on pottery and porcelain, though but slightly illustrated, suggests how much there is of interest in this branch of Spanish art, of which few in this country probably know much; and one of the objects illustrated, a wine-jar ("tinaja") in the South Kensington Museum, though exceedingly simply treated as regards the method of workmanship, is one of the most characteristic and admirable things of the kind that we have seen; Messrs. Doulton might take an inspiration from it. The splendour of Spanish arms, and the great repute of the country in the manufacture, are almost proverbial. The author alludes to the great variety of Spanish arms, tracing this in part to the influence of the Arabs, who, according to one of their own authors, had as many as a thousand names to designate swords. "The Arabs, after they took possession of Spain at the beginning of the eighth century, imported, with their arts and industries, special arms and weapons, the greater part of which were copied from Persian models; their swords, helmets, and shields deserve special attention; in other weapons the difference is not so great, and indeed, in the two first it is chiefly confined to their decoration." The description of the sword which belonged to the last king of Granada (Boabdil), and now in the possession of the Marquis of Villaseca, at Madrid, gives, accompanied by the illustrations, a remarkable idea of the importance attached to this chivalrous weapon, and the expense and talent lavished upon it by grandees. The hilt is of solid gold, enamelled in blue, white, and red, in the well-known Moorish style, and the weapon has quite a small pamphlet, as one might say, of chivalrous and pious inscriptions, engraved in different positions, the attributes of the Almighty being the principal subjects of the mottoes or legends, some of which are in odd contrast (to modern feeling at least) with the purposes of the object which they adorn: "In the name of God, power belongs to Him, there is no other divinity but He, happiness proceeds from God alone"; "God is clement and merciful." The *montante*, or double-handed sword, has an iron hilt, ornamented with ivory, and with only the motto, "God alone is the conqueror." Probably the more ornate weapon was the show one, and the latter intended for serious business. The title of the double-handed sword occurs in a slightly differing form, we may notice, in Shakspeare, where Beatrice sarcastically inquires after Benedick, "Is Signor Montanto returned from the wars?" the expression being a reference to his supposed martial pretensions, as if she had called him "Mr. Long-sword." A still more characteristic specimen of art applied to weapons is, however, that figured by Señor Riaño on p. 89, a dagger with a blade of very elegant but very practically effective shape, ornamented with arabesques where it joins the hilt, but the latter is formed of a skeleton with the leg-bones doubled and a serpent twining in and out of the bony framework. The chivalrous appearance of the blade, and the ghastly hilt, form a combination singularly suggestive of the time when murder under certain circumstances was a gentlemanly crime and a word of impertinence might be answered by a stab with one of these elegantly ornamented blades. There is much more in Señor Riaño's little book which will be found interesting and suggestive, giving to the reader who is inclined to pursue further the subject of Spanish art sufficient of its outlines to show him where and in what direction to continue his studies.

Miscellanea.

Electric Lighting for Interiors.—The members of the Museum, Library, and Arts Committee of the Corporation of Liverpool assembled on the 8th inst. in the Picton Reading-room for the purpose of witnessing experiments with gas and the electric light. A number of gas chandeliers had been fixed round the room, and these were first lighted, after which the room was illuminated with the electric light. Three small Gramme machines had been placed underneath St. George's Hall, the necessary motive power being supplied by the engine which elevates the water for the Steble fountain, and in the centre of the reading-room a temporary pedestal, about 15 ft. high, was erected, upon which the lamps were fixed. Mr. M. Radcliffe Ward conducted the electric experiments on behalf of the British Electric Light Company. It is stated that the Committee have determined to adopt the electric light.—— At the meeting of the Metropolitan Board of Works on the same day, a report was presented by the Works Committee, stating that in considering the question of renovating the Board's offices during the recess, they had found it necessary to direct that a new sun-gaslight be fixed in the Board-room, and in connexion with this subject the attention of the committee had been directed to the desirability of making a further trial of electric lighting. An offer had recently been received from the French Electric Society to provide twenty additional lights on the Thames Embankment, at a cost of 3d. per light, and it was proposed that eight or ten of these should be placed on Waterloo-bridge, and the remainder along the Northumberland-avenue. It seemed, however, that the Vestry of St. Martin's-in-the-Fields was not willing to co-operate with the Board in the matter, on the ground of the extra expense, and the committee thought that some of the additional lights might be utilised at the offices of the Board. They accordingly recommended, "That arrangements be made for placing four electric lights in the Board-room on standards erected in convenient positions, and one light over the principal entrance of the building." The recommendation was adopted.

Architects' Fees.—At the last meeting of the West Ham Board of Guardians, the clerk read a letter from Mr. Angell, the Board's architect, declining to acquiesce in the resolution of the Board, passed at a previous meeting, in reference to the sum to be paid him for his professional services in connexion with the enlargement of the house, and stating that in justice to himself and his profession he could not consent to the terms then agreed upon, as the resolution had been passed without previous consultation with him on the subject. He further pointed out that he had been appointed as "consulting architect" only, and when the Local Government Board had rejected the first plans, he had been obliged to get out fresh ones, which had been done upon the usual professional charges.—Mr. Angell was here admitted to an interview with the Board, and suggested an arrangement to which he should be willing to agree, as a compromise to get rid of a difficulty. After a long conversation, the further consideration of the matter was deferred.

A Sanitary Congress.—The Sanitary Congress and Exhibition of the Sanitary Institute of Great Britain will this year be held at Croydon, from October 21st to November 8th inclusively, Dr. Richardson, F.R.S., president. There will be three sections, as follows:—1. Sanitary Science and Preventive Medicine; president, Alfred Carpenter, M.D. Lond., J.P. 2. Engineering and Sanitary Construction; president, Captain Douglas Galton, C.B., and 3. Meteorology and Geology; president, Mr. G. J. Symons, F.R.S.

American Joinery.—A considerable trade has been gradually diverted from England of late years, in the shape of machine-made doors, window-sashes, and other joinery, which are now being furnished to this country and to our Australian colonies in very large numbers. The trade first commenced in 1877, when 2,800 doors were shipped to Great Britain, an amount which last year was increased to 45,000. As much of the pine wood used in England comes from the States, the diversion of a manufacture of so much importance is a double loss to this country. A large number of machine-made doors also come here from Sweden.

The Late M. Louis Favre and the St. Gothard Tunnel.—"The death of Louis Favre, the contractor for the St. Gothard Tunnel," writes the Geneva correspondent of the *Times*, "adds a deeply pathetic incident to the chequered history of the famous enterprise with which his name will ever be associated. He died of apoplexy, not at Göschenen, as at first stated, but inside the gallery; and, as he had issued invitations to his friends only a few days previously to meet him at a not distant date midway in the mountain, there to celebrate the completion of the great tunnel which he had made, he may be said to have died like a general on the field of battle with the shout of victory ringing in his ears. Favre was born in 1826, in the canton of Geneva. His parentage was obscure and his education indifferent, and he began life as a common workman. But he showed so much ability and energy in his calling that, while still young, he rose from the ranks and became a builder and contractor on his own account. Finding Geneva too narrow a field for his activity, he removed to Paris, and acquired much money and reputation as an undertaker of public works. When the making of a tunnel through the St. Gothard was put up for public competition, Favre's tender was accepted, and so great was the confidence felt in him in his native city that he found no difficulty in raising among the bankers of the place, several of whom became his *commanditaires*, the large sum of 250,000*l.* required by the Federal Council as security for the due carrying out of the contract. All Favre's calculations have been justified by the result." The tunnel will be finished before some of the lines of approach are well begun; and if the company had not failed in their engagements towards him, his part in the undertaking would have long since been completed. Their financial arrangements so utterly broke down that at one time he had to defray all the current expenses from his own resources."

Leaf Decorations in Architecture.—Mr. C. R. Kelly contributes to the *Gardener's Magazine* an article on this subject, as exemplified in the decorations at Tarporley Town-hall. He says:—"I have long been of opinion that in many cases interior decorations have been executed in a style much too heavy for the character of the buildings, that far more material was used than was necessary, and that a much more graceful and pleasing effect could be produced by single leaf work, combined with very light dressing of the parts requiring more than the single leaf. The character of the building is, of course, the first consideration, there being, in my opinion, three very distinct classes of interiors, viz.,—1. Where great architectural beauty of design is displayed; 2. Where the architect has been allowed to display his art in the interior only to a limited extent; 3. Where no pretension to architectural display is present. Now in each of these three classes I consider quite a different style of decoration is necessary. In the first, where the architect has done so much, the question naturally arises, should any more be attempted? This question, I think, ought to be very carefully weighed by the decorator, and the greatest care exercised, lest, instead of embellishing, he should in any way conceal or destroy the beauty of any detail in the design of a mind perhaps greater than his own. Let him carefully study the design, and try to get as near as possible to the mind of the original designer, so that he may, as far as possible, only carry out such embellishments as are indicated by the character of the building, as likely to be executed by the architect were he requested to enrich and adorn his work to a fuller extent. Let graceful, neat, and elegant designs be placed only where architectural carved designs would be most likely to be placed."

Faccombe, Hants.—Considerable additions to the Manor House were commenced in March, 1878, for Mr. Allan B. Heath. These have now been enlarged upon, so as to form a suitable family mansion for the estate, which comprises an area of about 4,500 acres. The works are still in progress, and it is expected the mansion will be fit for occupation by the spring of 1880. The style of the building is in keeping with the character of the manor-house, which was rebuilt during the last century. The work is being carried out by Mr. H. Isles, of Faccombe, assisted by London workmen, from the plans and under the supervision of Mr. James H. Money, architect.

Destruction of Timber.—Notwithstanding the increasing substitution of iron for timber in construction, the increasing use of coal, and the introduction of mineral oil for fuel, the forests of the world are being rapidly diminished, much of it from sheer wastefulness; and this is especially true in new countries. In the United States 20,000,000 of people are living in perishable wooden dwellings, and immense quantities of the best timber are destroyed in the process of bringing the forests of the West under cultivation. Unfortunately, too, the most valuable and slowest growing species affect the soils best fitted for grain, and the pioneer never thinks of saving portions of the timber on his allotment, or of replanting. The result is that in North America, which when first settled was clothed in greenwood from sea to sea, a note of warning has for some time been raised against the indiscriminate use of timber, and replanting in some of the States has been encouraged by pecuniary inducements. In Australia, from its physical peculiarities, still more liable to drought than either North America or Central Asia, the effects of the destruction of its timber have been more rapidly and more distinctly manifested, and the colonists appear to be seriously alarmed as to the consequences. They are calling for restrictive measures, and others of a reproductive character are already in operation.—*Iron.*

The St. Sepulchre's Faculty Case.—The petitioners in this case were the vicar and churchwardens of the City portion of the parish St. Sepulchre, Holborn, who applied for an additional licence or faculty to carry out alterations of the parish church. A faculty was obtained last year, and the churchwardens of the Middlesex part of the parish applied to restrain the alterations. Dr. Tristram gave a lengthy judgment, in which he reviewed the history of St. Sepulchre's Church from ancient time, and the laws applicable to churchwardens. The five churchwardens had petitioned last year for a faculty, and he was of opinion that from the additional faculty the Middlesex churchwardens could not be excluded if they wished to be joined in it. The funds were vested in the City churchwardens, and they claimed to be trustees. That question would have to be decided by the Chancery Division. He would direct a faculty to be granted to them as trustees of the fund. He considered that all the five churchwardens were officers of the ordinary, and entitled to a voice in the management of the church. Each party would pay their own costs, and if there was a parochial fund out of which they could be paid, he would give a certificate. Order accordingly.

Antiquities.—Information has reached us from the Pyrenees that in examining the ancient sites of Phocæan and Phœnician settlements Dr. Phené has found a bronze head of the goddess Isis, of rude but expressive workmanship. The horns of the cow are well formed, and surmounting them is the crescent moon, the ears of the cow are pendent and distinct, and with the exception of the face, which is benignant and of human form, the portion of the body exhibited is clothed in the skin of the cow. It appears to have been made for elevation on a staff or standard. Some rude objects found with it are said to indicate a very early date.

Technological Examinations.—The results of the first technological examinations, held by the newly-formed City Institute for promoting technical education, have just been published. These examinations were established by the Society of Arts in 1873, and at the beginning of the present year they were transferred to the Institute. The number of candidates examined was 202, of whom 151 satisfied the examiners in technology. In the programme of examinations for next year, which will shortly be issued, many important alterations have been made, and it is expected that the offer of payments to teachers of successful candidates will attract many more candidates than have yet appeared.

The Artisans' Dwellings Act in the City.—The area of the first scheme which has been commenced in the City under the Artisans' Dwellings Act (the Golden-lane scheme) is now cleared, and will, it is stated, shortly be offered for sale. The roadway of that portion of the thoroughfare within the City was, until recently, not more than about 15 ft. wide, and in some parts it was even narrower, but it has now been made about 50 ft. wide.

Fall of Building in Portugal-street.—On the 18th inst., the Westminster coroner held an inquest at St. Clement's Vestry-hall touching the death of William Clarke, aged nine years, who was killed by the fall of a portion of a building undergoing demolition for improvements in Portugal-street, Lincoln's Inn-fields. Mr. M. H. Lewis, solicitor, watched the case for the relatives of the deceased, and being a witness of the occurrence, was sworn. He said that he saw a wall within the hoarding fall a distance of 20 ft., and the deceased was crushed beneath it. The houses being pulled down in Carey-street had protective hoarding, but where the accident happened there was none. Mr. Dale, of Vale-place, Kensington, said he was passing on the pavement when he saw a man, who was pushing the wall down, shout to the boy, but before he could get clear the whole mass went into the road and struck deceased. Mr. George Ashton said he bought the property for removal, understanding it was safe. On pulling down near the part spoken of, witness found the "compo" running out, and consequently the brickwork was broken, and was independent of the party-wall, and this caused the pier to give way: hence the accident. Verdict, "Accidental death."

St. Enoch's Station Hotel, Glasgow.—We would add to the list of names enumerated in the *Builder* in connexion with this building, those of the well-known firm of C. Jeakes & Co., of Great Russell-street, Bloomsbury, who were engaged to execute the whole of the various cooking apparatus and steam-laundry. These were of an extensive nature, and were carried out under the direct personal supervision of Mr. Edward Clements, the principal member of the firm.

Monumental.—On the 9th inst. a monument, which has been erected by public subscription at Kilmarnock to the poet Burns, was inaugurated by Colonel Alexander, M.P. for South Ayrshire. The monument, which is in the Scottish Baronial style of architecture, contains in an alcove a statue of the poet after the portrait by Naysmith, by Mr. W. G. Stevenson, of Edinburgh. The monument has been erected from the designs and under the superintendence of Messrs. J. & R. S. Ingram, architects.

Robbery by a Carpenter.—At the Westminster Police Court, Henry Peckover has been committed for trial on a charge of stealing, on the 8th inst., from a workshop at Messrs. Trollope's Works, Grosvenor-road, Pimlico, eleven planes and a stock, the property of George Mearings and others, value 8*l.* 5*s.*; he was further charged with assaulting Henry Freaker, the watchman at the works. The prisoner had formerly been in Messrs. Trollope's service.

TENDERS

For the erection of a new Children's Home, Schools, and outbuildings, &c., at Nantwich, Cheshire, for the Guardians of the Nantwich Union. Mr. J. Aldersey Davenport, architect:—

Yates	£4,130	0	0
Cottrill	3,827	0	0
Brown	3,788	0	0
Lucas	3,750	8	0
Harding	3,715	0	0
Ray	3,695	0	0
Latham	3,610	0	0
Jones & Co.	3,590	0	0
Price	3,490	0	0
Parker	3,468	0	0
Wood & Gresty	3,389	3	9
Meadows	3,325	0	0
Bromage	3,240	0	0
Madeley	3,203	0	0
Matthews	3,200	0	0
Brereton (accepted)	2,908	12	6

For Tyne Dock Police-station and Officers' houses, Mr. Matthew Hall, architect. Quantities by Mr. George Connell:—

Atkins & Co.	£3,114	6	9
Simpson	2,994	15	1
Scott & Son	2,891	15	11
Elliott	2,873	0	0
A. & P. Marshall	2,870	0	0
Halliday & Christie	2,817	1	8
Richardson	2,811	3	4
J. Nichol, jun.	2,736	0	0
Harwood	2,721	3	9
Kennedy & Son	2,687	14	10
Hepple	2,665	11	6
Summervell & Young	2,664	3	4
Mackey	2,599	12	0
Hurst & White	2,565	14	10
Fishburn	2,410	0	0
Storrar	2,406	0	0
Smith	2,397	0	0

For works to gateway and rooms over Paulin-street, Bermondsey, for Mr. W. Elliott. Messrs. George Elkington & Son, architects:—

Eldridge & Gee (accepted)	£210	0	0
Roffey	193	0	0

For alterations, &c., at the Crown, Broad-street, Golden-square, for Mr. Gupwell. Messrs. Bushill & Finlayson, architects:—

Beale	£334	0	0
Everett	319	0	0
Fairchild & Son	318	0	0
Gritten (accepted)	291	0	0
Williams	290	0	0

For works at the new Charing-cross Hair-cutting Saloon, 36, Chandos-street, for Messrs. Nash & Co.:—

Goodman (accepted)	£351	6	10

For the erection of additional almshouses at Kingston, for the Trustees of Kingston Almshouses. Mr. Luck, architect. Quantities supplied by Messrs. Northcroft, Son, & Neighbour:—

Vare	£2,047	0	0
Hockley	1,849	0	0
Manley	1,843	0	0
Mudie	1,760	0	0
Stevenson	1,699	0	0
Clemence	1,695	0	0
Jones	1,650	0	0
Wheatley	1,646	0	0
Wells	1,550	0	0
Merrywether	1,499	0	0
Adkins	1,469	0	0
Jarvis	1,435	0	0
Todd	1,257	0	0

For raising and levelling ground, and erecting boundary wall, Burton Joyce, Nottinghamshire. Mr. Herbert Walker, architect:—

McCulloch	£693	0	0
Sills	421	0	0
Bickmore	375	0	0
S. & J. Cargill	293	0	0
Smart, jun., & Co.	289	0	0
Henson	275	0	0
Meats, Bros.	269	0	0
Key (accepted)	249	0	0
Smith & Greaves	256	0	0

For building two shops and offices in Theobald's-road for Mr. R. A. Notley. Mr. F. C. Notley, architect. Quantities by Mr. W. Barrett:—

Brass	£4,297	0	0
Haworth	4,121	0	0
Conder	4,112	0	0
Greenwood	4,082	0	0
Tarrant & Son	4,025	0	0
Langmead & Way	3,858	0	0
Macey	3,811	0	0
Scrivener	3,671	0	0
Morter	3,653	0	0

For alterations at 3, Hyde Park-gate South, for Mr. F. H. Streatfield. Messrs. Perry & Reed, architects. Quantities supplied:—

Clarke & Bracey	£1,062	0	0
Clemence (accepted)	937	0	0

For paving to mews, Haverstock-hill. Mr. R. W Giblett, surveyor:—

Holland	£137	0	0
Mowlem & Co.	125	0	0
Nowell & Robson (accepted)	108	0	0

For proposed schools for 350 children at Redbourne Cheney, near Swindon, Wiltshire, for the School Board of that parish. Messrs. W. H. Read and W. Drew, joint architects:—

	Schools.	Boundary Fences, &c.
Phillips	£1,635 10	£450
Forshaw	1,072 0	412
Barrett	1,563 16	431
Wiltshire (accepted)	1,533 0	424

For alterations to the Ship Tavern, Finsbury-place. Messrs. Bird & Walters, architects:—

Temple & Foster	£1,009	0	0
Godden	994	0	0
Mark	970	0	0
Lawrance	949	0	0
Grimwood & Sons	893	0	0
Brown	798	0	0
Anley	773	0	0

For alterations at the Elephant and Castle, Victoria Park-road, for Mr. R. Clarke. Mr. H. J. Newton, architect:—

Lewis	£1,218	0	0
Cocks	1,140	0	0
Curtis	1,090	0	0
Godden	994	0	0
Beale	989	0	0
Lamble (accepted)	970	0	0

For repairs and alterations to the Foundation School, Whitechapel. Mr. W. A. Longmore, architect:—

Outhwaite & Sons	£630	0	0
Jacobs	620	0	0
Read & Son (accepted)	608	0	0

For five villa residences, Richmond road, New Barnet, for Mr. B. J. Mills:—

Smith (accepted)	£3,250	0	0

For rebuilding shop premises, Nos. 33, 35, 37, Newington Butts, for Mr. C. Thompson. Mr. Banister Fletcher, architect:—

Taylor	£2,281	0	0
W. & H. Castle	2,200	0	0
Downs	2,157	0	0
Burman	2,140	0	0
Tyerman	2,127	0	0
Prout	1,948	0	0
Hobern (accepted)	1,945	0	0

For rebuilding the Tankard Public-house, Kennington-road, Lambeth, for Mr. Henry Mason (first contract Mr. Banister Fletcher, architect:—

Ansell	£1,650	0	0
Wagner	1,589	0	0
Cooke	1,519	0	0
Tyerman	1,408	0	0
Kirk	1,399	0	0
Hobern	1,370	0	0
Smith	1,357	0	0
Burman (accepted)	1,240	0	0

For the new offices for the Wolverhampton Board of Guardians. Messrs. Banks & Doubleday, architects:—

	£3,684	0	0
Thompson	3,591	0	0
Lovatt	3,300	0	0
Clark	3,276	0	0
Smith	3,250	0	0
Dawson & Bradney	3,000	0	0
Trow & Sons	2,998	0	0
Horsman & Co.	2,920	0	0
Pritchard & Feltham	2,839	0	0
Evans (accepted)	2,839	0	0

For alterations and additions to the Wellington Tavern, Shepherd's Bush. Mr. Alexander Pilbeam, architect:—

Haynes	£315	0	0
Riches	299	10	0
Hobern	276	0	0
Schlater	272	0	0

For house in Netherhall-terrace, Hampstead. Mr. Samuel Knight, architect. Quantities by Mr. G. Fleetwood:—

Adamson & Sons	£3,462	0	0
Patman & Fotheringham	3,450	0	0
Nightingale	3,443	0	0
Roberts, Bros.	3,397	0	0
Longmire & Burge	3,385	0	0
Dove, Bros.	3,328	0	0
Grover (accepted)	3,338	0	0

For new lecture-hall, New College Chapel, St. John's Wood. Mr. Samuel Knight, architect. Quantities by Mr. G. Fleetwood:—

Boden	£1,242	0	0
Grover	1,093	0	0
L. H. & R. Roberts	1,070	0	0
Patman & Fotheringham	1,059	0	0
Adamson & Sons	1,045	0	0
Nightingale	1,025	0	0

For alteration to mansion, new stables, coach-house, and loose boxes, 10, Kennington-park-road, for Mr. R. Roe. No competition:—

Page (accepted).

For Llanidloes sewerage:—

Williams & Hurst	£6,537	0	0
Carver	6,500	0	0
Mackey	6,349	0	0
Cowdery & Son	6,295	3	10
Dickson	5,983	0	0
Davies & Son	4,490	11	3½
Frayne & Sheldon (accepted)	4,328	4	6

For the completion of the large dining-room at Wardour Castle, for the Right Honourable Lord Arundell of Wardour. Mr. Patrick J. J. Fay, architect:—

Wright	£617	0	0
Jackson & Todd	527	0	0
Hale & Son	527	0	0
Amended Tenders.			
Hale & Son	493	0	0
Jackson & Todd (accepted)	486	10	0

For the decorative painting of ceiling, &c., of the above dining-room:—

Kettler (accepted)	£95	0	0

For alterations and repairs to house, No. 12, Arundell-street, Haymarket, for the Honourable R. A. Arundell. Mr. Patrick J. J. Fay, architect:—

Jackson & Todd (accepted)	£250	0	0

For alterations at the Prince Edward Tavern, Parkhurst-road, Holloway, for Messrs. Mapp & Miller. Mr. John Viney, architect:—

Clarke, Bros. (accepted)	£127	0	0
Fittings.			
Godden	£80	0	0

For alterations at the Florence Tavern, Islington, for Mr. Barker. Mr. John Viney, architect:—

Smith (accepted)	£315	0	0
Fittings.			
Smith	£205	0	0

For alterations at the Rose and Crown, Burne-street, Edgware-road, for Mr. Leheap. Mr. John Viney, architect:—

Shapley	£440	0	0!
Jackson & Todd	430	0	0
Hatcham & Son	410	0	0
Mark	357	0	0
Burch & Moor	347	10	0
Dodd & Robbs	329	0	0
Bostock (accepted)	180	0	0!

For alterations at the Elephant Tavern, High-street, Kingsland, for Mrs. Mary Todd. Mr. John Viney, architect:—

Jackson & Todd (accepted)	£550	0	0
Fittings.			
Hill (accepted)	£299	0	0
Pewtering.			
Heath (accepted)	£148	15	0

For alterations at Deacon's Coffee-house, Walbrook, for Mr. Howell. Mr. John Viney, architect:—

Smith & Son	£225	0	0
Burch & Moor	200	0	0
Jackson & Todd (accepted)	196	10	0

For additions to Northumberland House, Stoke Newington, for Drs. Stocker & Wright. Messrs. Whitfield & Thomas, architects. Quantities by Mr. T. M. Deacon:—

Braid & Co.	£1,550	0	0
Williamson	1,544	0	0
Grover	1,367	0	0
Bangs & Co.	1,350	0	0
Jarrett (accepted)	1,320	0	0

For erecting six houses, and forming private roadway in Gunnersbury-lane, Acton, for Mr. W. T. Thorn. Mr. Percy Hunter, architect:—

Cowland, Bros.	£2,541	0	0
Brown	2,445	0	0
Blackall	2,187	0	0
Waters	1,828	0	0

For the erection of a shop, house, and premises, on the site of Nos. 90 and 91, Newman-street, Oxford-street, for Messrs. F. & C. Osler. Messrs. Field & Barnet, architects. Quantities by Messrs. Johnstone & Paine:—

Jackson & Graham	£8,767	0	0
Barnsley & Sons	7,988	0	0
Rider & Son	7,778	0	0
Wilson & Exton	7,463	0	0
Wall, Bros.	7,291	0	0

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